GAS JOURNAL

LIGHT ✂ HEAT ✂ POWER ✂ BYE-PRODUCTS

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EDITORIAL NOTES.

Tendencies—Be Prepared.

"BE PREPARED!" That was the chief message of the extraordinarily timely address which the President of the Southern Association (Mr. R. Robertson, of Bristol) delivered at the meeting of the members on Tuesday of last week. It was the purport of the remarks made at the luncheon by the President of the Institution of Gas Engineers (Mr. C. F. Botley); it was the tenor of a penetrating speech by Sir Arthur Duckham at the close of the Presidential Address. We are gratified that the looking-ahead policy which we have been advocating in the "JOURNAL" for some time coincides so largely with the views of prominent men in the industry who have its interests much at heart—not only its immediate interests, but those in the circumstances ahead. It is the first meeting of professional men of the industry at which there has been open and plain speaking on the topic of the tendencies of the times, whither they are leading, and what should be the attitude of the industry in relation to them. That attitude is summed-up in the President's counsel—"Be prepared!"

The address was a brilliant one—philosophic, far-seeing, inspiring; and was presented with an artistic touch which is characteristic of its author, and which tended to make clear and to drive home truths and advice which is much needed in the industry to-day. Several of those truths were illustrated by comparison. The differences between the gas industry of yesterday and to-day were brought into the picture; and then deftly there were introduced the differences between yesterday and to-morrow, which are coming upon us through developments external to the industry. These are the things which have to be noted; when noted, studied; and when thoroughly studied and assimilated, properly dealt with. Looking at yesterday and to-day, we have the greater complexity of our internal affairs, which have called for corresponding changes in outlook and method. That development of complexity has called for the birth of new organization within the industry; but while organization on all the lines we now have is an imperative state, it is not enough. The growth of complexity has demanded changes in our processes, practices, methods, and doings of men. Of all these necessary changes, the most important is that of the views and actions of the men within the industry. Those who have not kept abreast of the developments within it are a weakness. The "man on the spot," as the President describes him, is important in relation to the local problems with which he has to deal: and he is the better able to tackle the "job" with the machinery of the industry's organizations behind him. In the equipment of the wide-awake gas manager, there is a big difference between to-day and yesterday. He has the advantage of a great accumulation of knowledge and experience. The resources available to him are a storehouse of no mean size; and it is packed with good things which were not at the command of his predecessor. The manager of to-day needs it all; and he will require in his service, if it is to be of the highest efficiency, all the contribution that is still being made to his resources from quarters within, associated with, or outside the industry.

But the greater complexity that has grown in the internal affairs of the industry does not represent the summation of the things with which we have, or will have, to deal. The complexity is being added to in bulk manner by the tendencies and developments outside the industry, largely through political movement; and no one can say where they will lead, or what new action will be demanded of the industry to meet them. The President referred to modern political tendencies, to the greater democratic spirit that is abroad, to social evolution particularly in the industrial sphere, and to the interference of political power in industrial affairs. He described the Government electricity scheme as one of the greatest gambles since the South Sea Bubble; and he hopes the new bubble will be effectively pricked before any harm is done. A "colossal experiment" was the description applied to the scheme by Sir Arthur Duckham; and he asked the pertinent question: If a Conservative Government could go so far in foisting upon the country the most socialistic piece of legislation that has ever been proposed in this country, how far, with this example before them, would the next Labour Government go? The denial of the Government that this does not savour of socialistic legislation shows that they are either purblind or are trying to evade an unpleasant issue. Whether or not that piece of legislation is going to make competition for the gas industry more severe, is not the point. It is an inherently bad legislative scheme; and nobody knows what politically and financially it will land the country into, if the Government (or rather the Electricity Commissioners) succeed. The electricity industry is alive to this, and does not like the position. It places the direction of an industry covering the whole country in the hands of one small body of men. The electrical eggs are all going into one basket. This is the beginning of a new order of things in this country. Where is it going to end? Then there is the report of the Coal Commission. The Government have said they will adopt the whole report if the coal-owners and the miners will do the same. The President touched upon the fantastic scheme of the Miners' Federation for the development of the coal industry and coupling-up to it the making of gas, electricity, chemicals, and other products; and Sir Arthur Duckham referred to the suggestion of the Coal Commission that a Fuel and Power Committee should be set-up. This is a matter of which he has talked ever since the period when reconstruction committees, at the instance of the Government of the day, spent a lot of time and money, and produced reports, with abortive results. It is his belief that, had such a Committee been in existence, the Electricity Bill in its present form would not have been brought into being; and he urges that there should be a formulation of ideas as to what for the good of the country would be the best organization of such a Committee, and what should be their functions. That again is a possible development. It is one which should be for the good of the country; it is one which may form the starting-point for other developments. No one can yet tell. A great deal of care would have to be exercised in regard to it. If its functions were limited to the consideration of the fuel resources of the country, to the co-ordination of the use of fuel by the various industries, to the development through the gas industry of the use of smokeless fuels, and to the provision of oil and motor spirit so as to make at any rate our national services independent of imported supplies—well and good. But

we have seen the line along which it is proposed there should be a growth of the work of the Electricity Commissioners; and there is reason, if a Fuel and Power Committee be formed, for not permitting their functions to develop in like manner.

"Be prepared!" This is the moral which the President draws for the gas industry from his survey of developments within and external to it. The advice is sound; and such advice should be acted upon. There is a proneness, however, to consider that the work of our organizations compasses all that is necessary. They cannot, however, be the guardians of the individual interests of gas undertakings; their work must be supplemented by active prosecution of developing and safeguarding measures at home. The President, in urging all in the gas industry to put themselves into the best possible condition for meeting whatever may come along through the tendencies of the times, suggests in the first place strenuous opposition to any revolutionary change in the relations between the Government and the different services of the country. If, however, there are to be changes, we want fair play and no favour. In that counsel we have indicated a fit subject for the central organizations. The second line of preparation is that each undertaking should put its own house in order, and see to it that it leaves no room for either Gas Commission or State Department to function, by ensuring that the public have no reason to feel that their gas service could be more efficient. The President also urges serious attention to spreading-out into the country areas by transmission schemes from the more economically appointed works; and he touched upon the question of improving coke so as to increase its acceptability as a fuel. He also referred to the utilization of waste heat and waste gas, and to the possibilities of gas-works as eminently suitable centres for the economical production of electricity. There is much that can be done, which would have the dual effects of promoting and defending our business interests. No great effort of imagination is required to extend the survey of these matters which the President made so well, and his presentment of work which lies at hand. There is public service and the maintenance of appliances, which produce a development of business through efficiency and satisfaction. This makes inspection and maintenance work a splendid investment. With all that is going on about us, it would be folly to allow the President's advice to go unheeded. Then—"Be prepared!"

Annual Meeting of the Institution.

The programme which is being arranged for the annual meeting of the Institution of Gas Engineers promises to be of a highly interesting character. The meeting, as has already been announced, will be held from Tuesday, June 8, to June 10, in the Great Hall of the Institution of Civil Engineers, under the Presidency of Mr. Charles F. Botley, M.Inst.C.E., Engineer and General Manager of the Hastings and St. Leonards Gas Company. In view of the important subjects which are engaging the attention of the gas industry in these days, and regarding which there are sure to be large developments by the time the annual meeting is held, the opportunity will be taken by the professional men of the industry to get together as much as possible, and privately chat over them. It may be that these matters will not form special items in the programme; but we may be confident that, in his address, the President will treat of them, and from the standpoint of his knowledge of what is proceeding behind the scenes in the combined counsels of the industry.

The draft programme which we have before us is, of course, merely provisional; and it is too early to give definite information as to the titles of the papers and the authors who will be submitting them. But this much may be said, that the contributions will take us into the avenues of gas engineering and gas service, and of other topics of concern to those who carry on the administrative and executive functions of a gas undertaking. There will also be the usual reports from the Gas Investigation and other Committees; and, upon the preparation of these, there is at the present time considerable activity. In addition to the Presidential Address, which will be delivered at the morning sitting on Tuesday, several items of more or less formal character will be dealt with. There is a special fitness about the decision of the Council to present to Mr. George Evetts the "H. E. Jones London Medal." The original paper which he read at the meeting last year entitles him to the recognition; but the many years of professional work which Mr. Evetts had with our old and much-missed friend, Mr. H. E. Jones, will make the honour of this bestowal of the medal a matter for great appreciation on the part of the recipient. There will also be the presentation of diplomas awarded under the Institution's Education Scheme; and the Council will submit their annual report. During the morning sitting, opportunity will be taken to deal with the affairs of the Benevolent Fund, the list of subscribers to which there is urgent need to increase. Following, a commencement will be made with the Committee reports; and their consideration will be continued at the afternoon sitting. At both sittings on Wednesday, there will be reading and discussion of papers, and again on Thursday morning, until the time arrives for dealing with a small amount of concluding business, which will embrace the presentation of the Presidential Certificate. For Thursday afternoon alternative visits have been arranged—one is to the Fuel Research Station at East Greenwich, a second to the Chelsea Power House (Lots Road) of the Underground Electric Railway Company, and a third to the new showrooms of the Commercial Gas Company in the East India Dock Road. To this ladies will be invited.

Regarding the social functions, by invitation of the President and Miss Botley, there will be a reception and dance on Tuesday evening at the Connaught Rooms, Great Queen Street; and on Friday the members are invited by the Chairman and Directors of the Hastings and St. Leonards Gas Company, in association with the President, to spend a day at the popular seaside resort. Many of us have enjoyed the hospitality of the Company on previous occasions, and retain vividly in memory the geniality and kindness of our hosts. What has been will be; and, given benevolent consideration by the weather, the day will be one which will produce pleasure for everybody who is able to participate in the visit. Opportunity will be afforded for inspecting the works of the Company at Glyne Gap. No doubt not a few will wish to spend the week-end at Hastings; and in the information issued by the Secretary (Mr. W. T. Dunn) they will find where suitable accommodation can be obtained.

Pulling Together.

There is wide interrelationship between the work of the gas-supply industry and that of the makers of gas-consuming appliances. The prosperity of the former obviously means prosperity to the latter; but there is a proneness to overlook the fact that a large measure of the prosperity of gas-supply undertakings is due to the successful work of the appliance manufacturers. The thermal and working efficiency of all appliances by which gas is consumed is as important as the supply of gas of regular calorific power, specific gravity, and pressure; for, however uniform the latter is in those respects, there might be complete abrogation of the favourable conditions and damage to gas by inefficiency of the means of use on the premises of the consumers. It is due in no small measure to the advances which have been made in the means of use and application, that, in the first place, there has been during the last few years consistent and notable advance in the gas business everywhere, and that, in the second place, there is to-day confidence throughout the gas industry that, despite the Government electricity scheme and the activities of the electricity industry, prospects were never so good as now. The progress in the gas-supply business is shared by the makers of gas appliances. In the address of Mr. H. James Yates to the shareholders at the annual meeting of Radiation Limited, he stated that the sales of their productions last year were the highest on record, and that more land had had to be acquired with the view to an extension of some of the works. Those of our electrical friends who do not trouble to investigate the facts relating to the gas industry, but go along cheerfully with the idea that, through their efforts, the gas industry is suffering seriously from atrophy, will, if that statement comes before them, rub their eyes

to ensure that they have not misread the words. Holding the unique position that he does in the manufacture of heating and cooking apparatus, Mr. Yates knows well the strength and truth there is in his statement that, in view of the great developments and inventions that have been made in appliances using gas as the heating agent, electric cookers and heaters are unable to make stand against them. And providing only apparatus of the highest efficiency is supplied, he is "satisfied that the prospects of gas never stood higher than they do to-day, and that there never was better warrant for all connected with the gas industry going forward with strenuous endeavour joined with perfect confidence in the future." The prefacing condition to that statement brings us back to the part that our manufacturers have taken in the provision of gas-consuming apparatus of high thermal and operating efficiency. And they are not content with past achievements; they are out to do more, as witness the newly established laboratories of Radiation Limited for the purpose of pure research, apart from the works laboratories where the day-by-day chemical and physical routine control of manufacture proceeds. The expenditure on new research and daily experimental control is of a considerable nature; but it is due to such work that the cooker and the gas-fire of to-day are appliances that stand a considerable distance in merit from their predecessors—such a distance, in fact, that resemblance has been altogether obliterated. In this work Radiation Limited can claim to have taken a large part. They were, for example, the originators of that combination of features which has made the gas-cooker a scientifically begotten structure—viz., the "Rado" flame-spreading burner, hotplate construction on the unit principle, the placing of the oven-flue at the bottom of the oven, and the application of thermostatic control to ovens by the adaptation of the "Regulo" type of thermostat to that purpose. Those advances have individually and collectively meant high efficiency and economy in operation, which are advantages to both user and gas supplier, and the new hotplate construction is a gain for cleanliness and maintenance. It is original work and improvement such as this—improvement realized only by the expenditure of much money and time—that have strengthened the capabilities of the gas industry in the competition which it has now to encounter, and which will increase in power. But while we have such pulling together (as is illustrated by Mr. Yates' speech) on the part of our manufacturers and the gas-supply industry, the advantage will be mutual, and the users of our primary agent will be considerable beneficiaries. With such distribution of benefit, we have good ground for complete confidence in the future.

The Coal Position.

THERE has been much coming and going and conference during the past week in connection with the report of the Royal Commission on the Coal Industry. All parties agree that the more the report is considered, the more it reveals the careful research made by the Commissioners into all appropriate and essential matters; and there is acknowledgment that they have made a brave attempt to deal with the difficulties which the owners' and miners' representatives have encountered for long past, and which have always confounded them. Naturally, there are some things which have been recommended in the report which the Government would not have proposed; and there are also matters which the coal owners very sincerely dislike, and the same may be said for the Miners' Federation. But from all sides we have indications that the view is gaining ground that there must necessarily be some give-and-take if a compromise is to be effected which will set the industry again on the road leading to greater prosperity, to the advantage of all engaged in it, and those who depend upon it for the material from which to produce the light, heat, and power needed for the country.

There is not much likelihood of advance being made this side of Easter beyond where the matter was left by the Prime Minister at the interview he had with the representatives of the owners and miners last Wednesday. The Government, it then transpired, have decided to be very generous in their dealing with the report; they are willing, indeed, to go a long way beyond what they would have contemplated had the matter not been referred to a Royal Commission, whose report and recommendations were unanimous. The position is that both the owners and the miners have now to consider the statement of what the Government are willing to do; but performance is subject to both owners and miners accepting the Commissioners' report in its entirety. There is one movement by the Government outside the report. Although they agree with the Commissioners that the subsidy cannot continue in its present form, they have expressed a willingness, if the two parties will jointly adopt the report, to consider the granting of some temporary assistance to alleviate the financial difficulties of the poorest of the districts.

The Government have also stated in a compendious form the subjects on which special action would be required by them in the event of the report being accepted by the two parties. It is noticed from this that they are willing to afford further assistance in the investigation of low-temperature carbonization processes, and a matter in which the gas industry is peculiarly interested is the establishment of a National Fuel and Power Council. Then the Government are agreeable to the giving of State support for research in the coal industry itself Legislation would also be needed to promote desirable amalgamations by providing for compulsory transfer of interests where desirable. This would be necessary in view of the fact that there are amalgamations of colliery interests which might be effected were they not prevented by the dissent of some of the parties or by unreasonable claims. A matter which the Government would rather not have had to undertake is the State purchase of royalties; but they are willing to go even to that length in order to ensure a long peace in the basic industry of the country. There is also the question of contributions to the welfare fund; the granting of powers to local authorities to engage in the retail sale of coal; the appointment of a Standing Joint Committee of the Ministry of Transport and Mines Department to promote measures to secure the adoption of large mineral wagons on the railways, and a greater concentration of ownership of wagons; also profit-sharing schemes, providing for the distribution to the workmen of shares in colliery undertakings to be made obligatory by statute. Then the Government will be prepared to make such modification in the law governing hours as the owners and men may agree. We take it, however, the former will not interfere in this matter without application from both parties. Furthermore, the Government promise to facilitate the transfer of displaced labour, and to provide funds for the purpose. Then consideration is to be given to the regulations governing the qualifications of mine managers; pithead baths are to be compulsory and to be financed from the welfare fund; and joint pit committees are to be established generally. These are the lines of the far-reaching action the Government are ready to take to secure the complete adoption of the report. Will it be adopted? Some people are very hopeful. It is learned that the entire mining community are in reflective mood, and are endeavouring to balance gains and losses under the acceptance of the report and under its rejection. Regarding the proposed wages reduction, this looks drastic at first sight; but the miners see mitigating circumstances. It is realized that if regular work can supersede the average four days a week, earnings will not drop in anything like the proportion that the daily percentage might suggest.

There is little need to discuss any of the foregoing matters, in view of the fact that the offer of the Government is conditional; and nothing can be done until some decision has been arrived at by both owners and men.

The Electricity Scheme.

THE fact that the Government found it necessary specially to convene a meeting of the Unionist Members of Parliament on Thursday evening, for the purpose of giving the Attorney-General an opportunity of making an exposition of the electricity scheme proposals, shows that they are not satisfied as to the final issue of the measure. There has been a large expression of want of sympathy with it from the Government side of the House; and, although it was not anticipated that the Bill would not obtain a second reading, there is a feeling that in Committee it

will be attacked and modified to such an extent that it will retain little semblance of its original form. The number of Unionists present at the meeting does not give the Government any substantial indication regarding the views of the large remainder of their following; and, moreover, as no resolution was put before the meeting, the actual views of the members present are also undefined.

Sir Douglas Hogg was in the blandest of moods. He told the members—the information no doubt coming from the same source as the scheme itself—that, if the scheme went through, the saving to the consumers of electricity throughout the country would be £44,000,000 per annum. The Minister of Transport, Lt.-Col. Sir Wilfrid Ashley, went even better than the Attorney-General. He said the conclusion arrived at was that, in time, the scheme would save "scores of millions" a year! Many men in the electricity industry would like to have the Attorney-General and Sir Wilfrid Ashley in the witness-box, and examine them as to how the one had reached the figure of £44,000,000, and the other "scores of millions" of pounds. Sir Douglas also said that the National Board were not going to "produce" electricity. In the brief reports which have been published of the proceedings, we do not see that he told the Unionists that, if the Board are not going to produce, they are under the Bill going to control and direct the operation of the selected stations; and control and direction play a large part in production. Furthermore, only when no one else would operate a station, the National Board, with the consent of the Electricity Commissioners, would undertake the task. However, from what he said, it is the anticipation of the Government that, when the new electricity transmission lines can be tapped, factories will spring-up in rural areas like daisies. How this will come about, we have not the faintest notion, seeing that power forms such a small part of the total costs of a factory; and it is in other directions that our manufacturers desire to see retrenchment and reform, so that the heavier charges which oppress them may be lightened. Moreover, manufacturers have materials to be transmitted, which is more costly than the transmission of power, if the factory is distant from a good business centre. The statement of the Attorney-General that the whole cost of the scheme would work out to £33,500,000 will not be swallowed by men better informed than himself on the subject. He found himself skating on thin ice when asked whether the property of the Board would be of a national order; and he had to reply that in law the Board would be the legal owners, and so far as he could see would be trustees for the consumers. Nevertheless, he does not agree that the Bill will make the path easier to nationalization. On the contrary, he remarked: "If we leave things "as they are at present, it might be easier for critics to "say that private enterprise has failed. If the scheme "goes through and succeeds, it will remove the basis of "criticism; and there would be no justification for "nationalization." The Attorney-General must be conveniently blind. Most men will take the opposite view from the one expressed by him, and say that the whole scheme points to the opinion of the Government that private enterprise has failed, and this is the *raison d'être* for the Bill. Meanwhile, it is noticed that electric power companies' shares have been weakening in value. There is an uneasiness among electrical investors. They are now in a very different mood from that which led them to think, after the Prime Minister's Birmingham speech, that there was going to be a rapid cheapening of electricity, and that the industry was going to sweep into its net the whole of the light, heat, and power business of the country. There has been a turn of the tide.

One other point. From a communication received from Mr. Fred E. Cooper, it is learned that the Committee of the Gas Companies' Protection Association have had the Bill under consideration, and have come to the conclusions that it involves unfair competition for gas companies; that it places too much power in the hands of the Electricity Commissioners, from whose decision in matters which may, either directly or indirectly, affect gas companies there is no appeal to an independent tribunal; and that it empowers the Treasury to guarantee the principal and interest of any loans raised by the Central Electricity Board, to a total amount of no less than £33,500,000. Such guarantee will, the Committee are of opinion, become operative; and the burden of it will fall upon the taxpayers of the country.

[The debate on the second reading of the Bill is proceeding as this issue of the "Journal" is going to press.]

Pollution of Rivers.

Many questions affecting the pollution of rivers and streams were under consideration at the recent annual conference of the National Association of Fishery Boards. One suggestion was that the Association should make an effort to get the Chancellor of the Exchequer to employ some of the money in the Road Fund for the prevention of pollution by tar from roads; but tar as a matter of fact appears to be playing a very small (if any) part in the pollution. One speaker stated that the pollution is getting much worse. Sewage flows are increasing all round. From garages, oils and acids are being sent; and the droppings from motor vehicles on roads are also washed into the streams. Just recently we ourselves noticed on a stretch of the Thames that it was pretty well covered with an iridescent film, which showed that the washings from the roads were of an oily nature; and such a film must affect both the food and the health of the fish. It seems, too, that we can have no or little progress without doing some injury to fisheries. There is wireless, for example. Complaints have been made that in recharging accumulators of wireless apparatus, the spent acids are simply poured into the drains, and eventually find their way into the rivers. They also are harmful to fish life. Dr. E. C. Jee, of the Ministry of Agriculture and Fisheries, stated that they are conducting a survey of rivers, and endeavouring to find means to mitigate the effects of harmful effluents. Twenty rivers were surveyed in 1925, and the same number in 1924.

Technical Education.

A short time ago the President of the Board of Education and the Minister of Labour appointed a Departmental Committee "to inquire into and advise upon the public system of education in England and Wales, in relation to the requirements of trade and industry, with particular reference to the adequacy of the arrangements for enabling young persons to enter into and retain suitable employment." It is understood that the Departmental Committee have decided primarily to deal with the second part of the terms of reference. Having determined the adequacy or otherwise of the existing arrangements, they will then take-up the first part of the reference, and inquire into and advise upon the public system of education in relation to trade and industry.

Where Standardization Promotes Efficiency.

The British Engineering Standards Association are of opinion that misunderstandings have arisen in certain quarters regarding the efficiency of general standardization, in which connection the following extract from the report of the Royal Commission on the Coal Industry will be of interest: "The Mining Association, with the British Engineering Standards Association, has recently set out to standardize colliery plant and equipment; and the work is proceeding through Committees of those concerned with the manufacture and use of such plant. It is perhaps the most important general inquiry in which the industry has in recent times been engaged; and in view of the multifarious types of plant and equipment now used at different collieries for similar purposes, it may be expected to yield valuable gains in efficiency and economy." Standardization cannot be universal in any one industry; local circumstances are a governing factor.

Coal Exports.

The quantity of coal of all sorts exported during February amounted to 4,340,006 tons. This does not reflect the hoped-for extension in the coal business abroad The quantity is practically only the same as for February, 1925, when 4,344,008 tons were shipped abroad, as compared with 5,075,048 tons in 1924. The respective values of these quantities were: 1926, £4,025,627; 1925, £4,537,746; 1924, £6,200,971. Regard-

ing gas coal, the quantity sent abroad in February was 543,413 tons, of a value of £438,309. This averages the (in recent years) unprecedentedly low price of 16s. 1·5d., which compares with 16s. 4d. in January. In February, 1925, the amount of gas coal shipped was 568,966 tons, of a value of £584,412. The shipment in February, 1924, was 669,421 tons, of a value of £813,904. Taking the first two months of the year, the total quantity of coal exported was 8,488,048 tons, of which gas coal represented 1,105,929 tons, of a value of £898,144. The total shipments in the two months of 1925 were 8,710,059 tons, of which 1,120,742 tons were gas coal, to which a value was attached of £1,157,130. In the same period of 1924, 10,515,685 tons were exported, to which gas coal contributed 1,294,488 tons, of a value of £1,569,371.

Gas Coke Shipments.

The exports of gas coke have distinctly looked up. In February, 119,895 tons were exported, of a value of £126,884, which averages £1 1s. 1·9d. In February, 1925, only 41,714 tons were exported, of a value of £63,807. In February, 1924, the quantity was 105,227 tons, and the value £183,323. Taking the first two months of the year, we have a total shipment of gas coke of 257,646 tons (value £266,716); 1925, 105,520 tons (value £163,685); 1924, 249,629 tons (value £432,653).

Tar Products Shipments.

In February, 18,565 gallons of benzole and toluole were exported, as compared with 2252 gallons in February, 1925. The shipments in the two months amounted to 376,092 gallons, as compared with 62,480 gallons in the corresponding period of 1925. Incidentally it may be mentioned that in one week recently the Anglo-American Oil Company imported 163,710 gallons of benzole; and the Glico Petroleum Company, 130,940 gallons. In regard to naphtha, last month 15,684 gallons were exported, as compared with 5019 gallons in February, 1925. The shipments for the two months of this year amounted to 34,047 gallons, as against 7432 gallons in the same period of last year. A somewhat smaller quantity of tar, oil, creosote, &c., was sent abroad last month, compared with the same month of 1925; the respective figures being 3,823,610 gallons and 4,097,259 gallons. In the past two months, however, the figures for the same period of 1925 were beaten; the respective quantities being 8,472,094 gallons and 7,765,666 gallons.

Sulphate of Ammonia Exports.

The quantity of sulphate of ammonia sent abroad in February was 20,298 tons, compared with 27,975 in February, 1925. As in January, France has not been a buyer. In the two months of this year, the total export was 43,084 tons, as compared with 60,409 tons in the corresponding period of 1925—our principal buyers having been Spain and the Canaries, with 10,103 tons; the Dutch East Indies, with 10,180 tons; and Japan, with 9485 tons.

"Planet's" Article.

In the "JOURNAL" for July 1 last appeared a most useful article, by a member of the electrical industry, entitled "Gas *v.* Electricity." Reprinted, the article has met with a considerable demand, for propaganda purposes; but our stock is now exhausted, and we cannot undertake a further edition in order to satisfy three outstanding requests for copies. We should, however, welcome orders which will enable us to repeat the pamphlet at the old price of 8s. 4d. (or a little more) per 100. An advertisement appears on p. 788.

PERSONAL.

Mr. WILLIAM NEWBIGGING has been elected a Director of the Alliance and Dublin Consumers' Gas Company. He has served the Company since 1914 as Consulting and Constructional Engineer.

Mr. JOSEPH MCNICHOLL, Engineer and Manager of the Cork Gas-Works, has been elected a member of the Society of Chemical Industry, as has also Mr. WILLIAM A. S. VARDY, of Whitwood, Normanton, analyst and gas manager.

Mr. CHAS. COOPER, M.Sc., of the Technical Staff of Messrs. W. C. Holmes & Co., Ltd., Huddersfield, who has been making a tour of gas-works and coke-oven installations in the United States and Canada, left New York for England per s.s. "Regina," on Saturday, March 20.

As noticed in the "JOURNAL" for March 10, Mr. HERBERT BULLIVANT, who has been in the service of the Derby Gas Light and Coke Company for 53 years, and for a quarter of a century has occupied the position of Secretary, retires at the end of this month. Mr. LINDSAY STROYAN has been appointed to the position.

OBITUARY.

Mr. HAROLD COLLS, of the Yeovil Gas-Works, was killed last week in a motor accident on the main Yeovil-Sherborne Road.

EVENING STAR LODGE No. 1719.

Installation Meeting.

Members and guests to the number of about a hundred were present at the installation meeting of the Evening Star Lodge, which was held last Wednesday in the Grand Temple of Freemasons' Hall, Great Queen Street, London.

W. Bro. Hermann L. Sheppard, the retiring Master, was in the chair at the opening of the Lodge, with Bro. Alfred H. Henry as S.W., and Bro. Fredk. G. Cockey as J.W.

After the usual preliminary business the report of the Standing Committee and accounts for the year 1925-26 were submitted by W. Bro. E. G. Smithard, the retiring Treasurer, and approved.

W. Bro. Sheppard, on behalf of the Committee, moved, W. Bro. A. E. Broadberry, P.M., L.R., seconded, and it was agreed that the congratulations of the Lodge be extended to W. Bro. William Edgar, P.M., on his appointment to London Rank, and that the regalia of the office be presented to him. Bro. Edgar, having been invested with the regalia, warmly expressed his appreciation.

Moved from the chair, seconded by W. Bro. Arthur Valon, P.M., L.R., it was also unanimously resolved that, in recognition of his services to the Lodge, W. Bro. Walter T. Dunn, P.M., L.R., be elected an honorary member. It was announced that W. Bro. Dunn was retiring from the office of Secretary which he had occupied for some years. An illuminated address and presentation, subscribed for by the members of the Lodge, was handed to him with their good wishes, which were happily conveyed by the W.M.

Bro. Dunn, in replying, said how deeply he valued the honour which had been conferred upon him; for the evidence of their regard he was very grateful, and he assured all the brethren of his continuing and unabated interest in the Lodge in future years. He was very glad that W. Bro. Normand had consented to take over the duties of the office.

The ceremony of the installation of Bro. Alfred H. Henry, S.W., was then proceeded with, W. Bro. Sheppard being the installing Master, assisted by Bro. A. E. Broadberry as S.W., W. Bro. Arthur Valon as J.W., and W. Bro. J. F. Wicks as I.G. W. Bros. E. G. Smithard, Alfred C. Beal, and Rae P. Normand, P.M.'s, also took part.

The list of officers of the Lodge for the year 1926-27 is as follows:

W M.	W. Bro. Alfred H. Henry
I.P.M.	W. Bro. Hermann L. Sheppard, P.M.
S.W.	Bro. Frederick G. Cockey
J.W.	W. Bro. Arthur L. Croager
Chaplain	W. Bro. Alfred C. Beal, P.M.
Treasurer	W. Bro. Arthur E. Croager, P.M., P.P.G D., Kent
Secretary	W. Bro. Rae P. Normand, P.M.
D.C.	W. Bro. Arthur Valon, P.M., L R.
S.D.	W. Bro. James W. Foreman
J.D.	Bro. John A. Brentnall
Organist	Bro. John F. Simmance
I.G.	Bro. Albert B. Potterton
Stewards	W. Bro. Reg. W Foster, L.R. Bro. Thos. F. C. Potterton Bro. William H. Warren
Tyler	W. Bro R H. Goddard

One of the first acts of the newly-installed W.M. was to present his predecessor with the P.M. jewel of the Lodge; and further, on behalf of the initiates of his year (Bros. Swan, Claridge, and L. W. Dunn), to ask his acceptance of a P.M.'s emblem of office.

After the concluding business had been disposed of, the brethren adjourned to the Connaught Rooms for dinner, which was presided over by W. Bro. Henry.

The Loyal and usual Lodge toasts were duly honoured, W. Bro. Lionel F. Dunnett, P.A.G.St.B., replying to that of the "Grand Officers." "The Visitors," given by W. Bro. A. E. Broadberry, was responded to by W. Bro. H. Butterworth, W.M. of the Northern Star Lodge (No. 3053); W. Bro. Robert P. Vale, W.M. of the Murdoch Lodge (No. 3480); W. Bro. Dr. Bryant, L.R., St. Mary Balham Lodge (No. 3661); and W. Bro. G. B. Harrison, of G.L.A.S.F.I., P.G. Chaplain.

An excellent musical programme added to the enjoyment of the evening.

ELECTRICITY SUPPLY MEMORANDA.

During the ten days or so preceding the meeting which was arranged by the Government for their supporters in the House of Commons for instructional purposes preceding the debate (which took place early this week) on the second reading of the Electricity Bill, the floodgates of speech making and journalistic writing were fully opened. At lunches, dinners, and meetings, where political, electrical, and gas men have been, the Electricity Bill and the Weir report have had criticism poured upon them, or support given to them. It has mostly been the former, and of a definitely adverse nature. Take the Birmingham Electric Club annual dinner, at which the chief guest was Mr. P. J. Hannon, M.P. He described the Bill as the most bureaucratic piece of legislation that has ever been introduced, and, while he paid a compliment to the ability displayed by the Electricity Commissioners, he saw the danger of the personnel of the Commission being changed at some future time to suit the complexion of any political party who might be in office. In his view, the Central Executive Board should be able to discharge their obligations without reference to anyone but the competent Minister. The Bill, however, provides for practically the whole work of the Board being subject to the approval of the Commissioners. He made the novel alternative suggestion that it would be more in accord with the fitness of things if the Commissioners were entrusted with the preparation of schemes, and the Central Executive Board were made the determining authority. Much the same idea emanated, on the same occasion, from the President of the Institution of Electrical Engineers (Mr. R. A. Chattock, of Birmingham). Seeing that the Central Board will be composed of men of business and finance, and will be advised by twelve competent electrical engineers, it is his view that they should be able to direct the development of the supply industry without having to report to another body of men, who would be able to say "Yea" or "Nay." Mr. Chattock also declares that all who are affected by the Bill were looking for something much better than the scheme it provides. As to its effects in the big industrial centres, electricity is there developing along the right lines; and the talk of expansion can only affect a small number of undertakings, and will not alter very appreciably the cost of electricity. On the same occasion, Prof. W. Cramp expressed the view that to spend millions of money on a change that could be made quite easily and cheaply within a few years would be a great waste of money. In the judgment of Mr. A. D. Phillips, it is not inconceivable that the Government grid will become a veritable grid-iron on which the electrical industry will find itself very severely grilled. So much for the views expressed at the Birmingham Electric Club dinner. Such views, coming from a large industrial and commercial centre such as Birmingham, cannot be ignored.

Bill Critics.

Contrary Views.

Passing to the annual dinner of the British Electrical Development Association, we have a change of view; but the opinions expressed in some of the speeches do not necessarily reflect those of the members generally. One of the speakers was Sir John Snell, Chairman of the Electricity Commissioners; and he seemed very desirous of doing something to placate the gas interests, who, by the way, are not taking any part in the propaganda against the second reading of the Bill. The objection on their part is not to the principle of electricity development in this country, but to State assistance being given to the electricity industry which is in competition with the gas industry. The large public service rendered by the latter justifies its leaders at this particular juncture in taking all possible measures to safeguard its interests; and it will only be from this point of view that, if necessary, there will be intervention on the part of the gas industry. In his speech at the dinner of the "E.D.A.," Sir John pointed to the magnificent advances which gas and electricity are making side by side in the United States, and, in his opinion, there is room for both. Indeed, competition between them is good, as it gives rise to fertility in invention and enterprise in development on the part of both industries. We agree with all this; but that is not the point on which the gas industry joins issue with the Government. That point is their unprecedented action in attempting (whether or not successfully is another matter) to State aid by boosting one industry to the injury of a competing industry, the roots of which are so deeply embedded in the country. However, it is a matter to be deplored that an electrical engineer of the status of Mr. R. B. Mitchell, of Glasgow, should take an opportunity of publicly making remarks which he knows would be, and probably intended should be, detrimental to the interests of a competitor. Such remarks as he made certainly lacked the strength which one expects from a man in his official position—more especially seeing that the Corporation he serves are also the owners of a gas undertaking in which a very large capital is invested, and which renders a service to the citizens which it would be impossible for the Electricity Department to undertake without having an enormous capital lying idle during a large part of the year. He said it might be a pity that a great deal of the load which would be acquired by the fuller development of electricity supply must come from the gas industry, but, in his opinion, this is inevitable. We have not the slightest objection to Mr. Mitchell's entertaining that view. When, however, he proceeds to say that "the British public have been bred to use gas, but he believes the new generation will not tolerate it as it has been tolerated in the past, and more particularly will object to having food cooked in an atmosphere of gas fumes," we may be pardoned for saying that was an undignified, unnecessary, and—we are fully entitled to write "childish"—remark coming from a man holding the position that Mr. Mitchell does in the electricity industry. We wonder whether he knows anything of the chemical character of the atmosphere in which a joint of meat is cooked, whether by gas, electricity, or other agent. There was far greater strength and a much broader outlook in the opinion expressed by Major Isidore Salmon that he "does not believe a greater consumption of electricity necessarily means less consumption of gas. There are great opportunities and great possibilities for both."

Views from Company Chairmen.

At meetings which were held last week of important electricity supply companies, the Chairmen naturally had much to say regarding the Government Bill; and the views of such gentlemen cannot possibly be disregarded in the consideration by Parliament of the scheme which the Government have put forward. There has been, throughout the preliminary discussion of the Government plans for bringing about a reformation of electricity generation, much reference to what has been accomplished by the Newcastle-upon-Tyne Electric Supply Company, which is the largest example we have in this country of precisely the lines of development which the Government themselves are contemplating. The Chairman of that undertaking (Mr. R. P. Sloan) pointed out to the shareholders that there is no short-cut to the cheapening of electricity supply. By far the greater part of the cost of supplying electricity, certainly for domestic purposes, is the charge on the capital required for distribution mains and service connections, and it is only by consumers making greater use of this capital by increasing their individual consumption of electricity that any substantial reduction of cost can be brought about. Concerning the Central Executive Board, and their control of the running of all generating stations and of electricity supply authorities, together with the purchase from them of the current required for the purposes of the distributing undertakings, Mr. Sloan regards this as a substantial step towards nationalization; and he believes, if the Bill is passed into law, it will prove a retrograde step, and will very seriously hamper the development of the industry in future. Sir Harry Renwick, speaking at the meeting of the County of London Electric Supply Company, also asserted that it is by no means clear that the Government scheme will provide a cheaper supply. We turn to the meeting of the Metropolitan-Vickers Electrical Company, at which the Chairman (Major-General Sir Philip A. M. Nash) stated that it appeared to him that, under the terms of the Government Bill, the Central Executive Board are being surrounded by such restrictions as to make it doubtful whether it can function properly and quickly. While the Company desire to support legislation on grounds which will increase the use of electricity, at the same time they deprecate any steps being taken which will restrict even temporarily the progress which large power undertakings have been making, under existing conditions, during the last five years. In his view Parliament should convert the Bill into an Act which will not restrict, but which will assist the power supply side of the industry to go straight ahead.

Our Electrical Contemporaries.

Perusing our electrical contemporaries to ascertain their opinions on the Bill, we find in the "Electrical Review" a little whittling of its former opinions regarding the Government scheme. If the Weir report and the Bill are read together, we fail to see that any reason for moderating alarm is to be found; but our contemporary, after studying the Bill, feels that the "reality is less alarming than the anticipation." That view does not appear to be borne out by the statements to which we have been referring as made by prominent men associated with the work of electricity supply. Our contemporary finds consolation in the facts that, in relation to transmission and interconnecting lines, these are to be dealt with on an area basis, and that the clause as to standardization of frequency is merely permissive—the Board "may" require in due course to alter the frequency "if and so far as such alteration is required." But we would submit to the "Review" that, if the Bill means anything at all, it is that the intention is to bring about an ultimate standardization throughout the country. Otherwise there can be little ground

for a Bill the whole characteristics of which point to development being of a national order. However, our contemporary halts at these stages in the revision of its opinions. Later on we find that, in its judgment, the conclusion seems inevitable that the cost of electricity will be increased, unless an improved load factor results from the operations of the Board more than sufficient to wipe out the additional burdens. That such improvement in the load factor will be obtained is the argument "that has been put forward to justify the adoption of this 'middle-man' system." Our contemporary hopes that this will prove well founded, although it can discover little evidence to that effect. Generally it looks upon the scheme as incomplete; and, in its view, the Bill will probably emerge from Committee materially changed from its present aspect. "Meteor" of the "Electrical Times" has not, after seeing the Bill, roamed from his previously expressed views regarding the scheme. One of the effects that he anticipates will be that second-hand electrical plant will be a drug on the market for nearly a generation. We fail to see that there can be any buyers. He also points to some of the Gilbertian proposals of the measure—such as, under the new regime, the owners of selected stations having to generate electricity, which they must sell to the Central Board, and then buy it back again from the Board for distribution. He also anticipates that the Bill will have a long and somewhat stormy passage, and that its last stage will differ from its first. So think most men. Dealing with the Weir report and the Bill, the "Electrician," which gives it unqualified support (of which recognition should be made in the next Honours List), makes this remark: "That the Weir report should be published so that electrical engineers could study for themselves the data on which the Bill was based, was recommended by the 'Electrician' a few weeks ago; and we are glad to see that our advice has been adopted." We must say it was very kind of the Government to accept the advice of our contemporary; but we rather think there is something a little egotistical about the quoted words. As a matter of fact, the pressure which was brought to bear in the House of Commons itself, we should imagine, had a greater compelling influence with the Government than the "advice" of our contemporary. But not content with having succeeded in such a remarkable manner, the "Electrician" makes another essay by giving a "word of warning" to both the Government and those who will come forward with amendments to the Bill. We have not the slightest doubt that the Government and those who propose to seek amendments will take due heed of the words of our contemporary. In its opinion:

> As it stands, the measure is well knit, and is admirably directed to achieve the end it has in view. The alteration of any one part to meet the wishes of a certain section of industry or the public may have an altogether unintended effect on some other part. This should be carefully watched, if this measure, when it becomes an Act, is to achieve that reduction in the future electricity bill of the country which the Weir report indicates as being necessary for our industrial prosperity.

Turning to other comments, it is noticed that the "Engineer" holds the view that "some day a cheap and abundant supply of electricity may be made available in this country; but we fear that by the time it arrives many of us will no longer need it." "Engineering" says the Weir report is of great interest; but it ventures to think "it hardly displays the judicial calm which is desirable when proposing radical alterations in the complicated activities of this country. It is clearly the work of enthusiasts who tell us that the 'coming age will be one of electricity.'" There is a little bit of badinage in the words: "After all this wretched non-electrical country of ours is still the world's largest exporter, and does pay its way."

"Hotspot's" Gas Knowledge.

The lack of knowledge of chemistry, physics, and conditions which affect heating problems frequently leads electrical writers into some curious statements affecting the relative performances of gas and electricity. We have found this more than once in the notes by "Hotspot," the writer of "Cooking and Heating Notes" in the "Electrical Times." An example is in a paragraph in the issue of our contemporary for March 11. There electricity is spoken of as being a standard quality production; but little is said of the effect upon performance of voltage oscillations. While suggesting that electricity is a standard quality product, "Hotspot" says that one cannot say the same of gas. He proceeds: "In London, for instance, gas quality varies from district to district. Calorific values, I believe, range from 600 to 450 B.Th.U. per c.ft. This has an important bearing on the inefficiency of operation of gas apparatus taken from one quality gas supply to another." Of course, he is wrong regarding the 600 to 450 B.Th.U. The declared value of the South Metropolitan Gas Company is 560 B.Th.U.; that of the Gas Light and Coke Company, 500 B.Th.U.; and that of the Commercial Gas Company, 475 B.Th.U. We suppose that our friend will agree that the Gas Referees, appointed under the Gas Regulation Act, would not be guilty of reporting to the Board of Trade the results of official testings which were not in accordance with fact, and with the results of testings supplied by the official examiners appointed, not by the gas companies, but by the London County Council. For the last complete quarter, the Gas Referees' report is that the Gas Light and Coke Company supplied gas of a value of 502·5 B.Th.U.; the South Metropolitan Company, 562·7 B.Th.U.; the Commercial Company, 480·3 B.Th.U. If our friend compares these figures with the declared values, he will see they are approximately the same as the declarations, and to the advantage of the consumer. As to the point that these different calorific values have an important bearing on the efficiency of operation of gas apparatus taken from one quality gas supply to another. In the report for 1922-23 of the Joint Gas Investigation Committee of the Leeds University and Institution of Gas Engineers, it is stated: "One of the most important findings of our earlier work was that thermal efficiency in use is over a very wide range (350 to 550 B.Th.U.) practically independent of the composition and calorific value of the gas used." Now another point which shows a deficiency of knowledge is a reference to some remarks made by Mr. G. Nobbs concerning gas geysers. It is said: "An endeavour is made to ascertain the destination of every geyser ordered, and burners appropriate to the special conditions are then fitted. Geysers to be used with gas of 600 B.Th.U. calorific value per c.ft. are fitted with burners four times as large as those supplied for gas at 450 B.Th.U. value." We have never read anything more ridiculous concerning gas use. As a matter of fact, if it were necessary, the burner should be smaller with the richer gas of 600 B.Th.U. per c.ft. than for the lower thermal value per c.ft. of 450 B.Th.U. Four times larger! It is really too funny for words. We would strongly advise "Hotspot" to improve his information on these matters before he indulges in the publication of such absurdities as those we find in the paragraph in question.

FORTHCOMING ENGAGEMENTS.

April 2.—North British Association of Gas Managers.—Annual spring meeting at Motherwell.

April 10.—London and Southern District Junior Gas Association.—Visit to the Mill Hill Works of the North Middlesex Gas Company.

April 10.—Scottish Junior Gas Association (Western District).—Meeting at Glasgow. Paper on "Coke," by Prof. Gray (Royal Technical College, Glasgow).

April 13.—National Gas Council.—Meeting.

April 13.—Federation of Gas Employers.—Meeting.

April 17.—Midland Junior Gas Association.—Visit to the Old Kent Road Works of the South Metropolitan Gas Company.

April 17.—Yorkshire Junior Gas Association.—Visit to Messrs. Brotherton & Co., Ltd., at Stourton.

April 23.—London and Southern District Junior Gas Association.—Meeting at Westminster Technical Institute.

April 30.—"B.C.G.A." Scottish Conference.—Perth.

May 5.—Society of British Gas Industries.—Annual general meeting at the Hotel Cecil, under the presidency of the Rt. Hon. Sir Alfred Mond, Bart., M.P.

May 6.—Eastern Counties Gas Managers' Association.—Spring meeting at Ipswich.

May 6.—Midland Association of Gas Engineers and Managers.—Spring general meeting at Dudley.

May 14.—Southern Association of Gas Engineers and Managers.—Visit to Bristol.

May 14.—"B.C.G.A." Manchester District Conference.—Buxton.

May 18.—"B.C.G.A." Cheshire and North Wales District Conference.—Wallasey.

June 1.—National Gas Council.—Annual General Meeting.

Sept. 9.—"B.C.G.A." Midlands District Conference.—Smethwick.

Institution of Gas Engineers.

April 13.—Advisory Committee on Education.

April 14.—Emergency Committee, Finance Committee, Council.

May 11.—Advisory Committee on Education.

May 12.—Benevolent Fund, Finance Committee, Emergency Committee.

June 7.—Council.

June 8-10.—Annual Meeting.

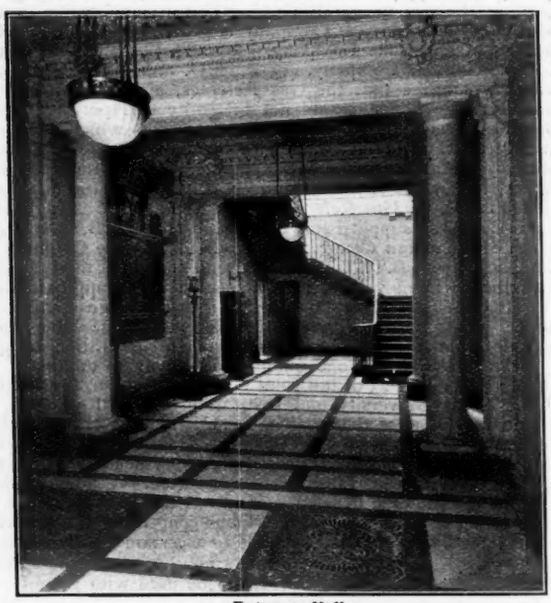
June 11.—Visit to Hastings.

GAS LIGHT AND COKE COMPANY'S NEW CENTRAL SHOWROOMS.

Service Enterprise at Horseferry Road.

Birthplace of the Gas Industry.

Westminster was the birthplace of both public gas lighting (Pall Mall was lighted experimentally by gas in 1807) and public gas supply, as the first Gas Company in the world opened its offices in Horseferry Road, after the granting of its Royal Charter in 1812. It is therefore of more than local interest that the Gas Light and Coke Company—still "the first gas company in the world" by virtue of its size—should in 1926 be demonstrating its determination to be first also by virtue of its spirit of enterprise and public service. That spirit, indeed, which animated its founder, Frederick Albert Winsor, and carried him over tremendous obstacles of doubt and prejudice, is not only undiminished, but has been strengthened by its 114 years of life and by the ever-increasing demand for efficiency in the supply of light, heat, and power. It now finds expression in the provision, at the headquarters of this historic enterprise, of new showrooms of the highest quality and character.



Entrance Hall.

The new showrooms in Horseferry Road, opened on March 23 in the presence of a large crowd of distinguished visitors, have been specially designed by Mr. Walter Tapper, F.R.I.B.A., to display gas fittings, fires, cookers, water heaters, and other appliances—not in serried ranks and heterogeneous groups, but each in an appropriate setting. By this means each fire or fitting can be seen as it would appear when installed in a home or other building for which it is suited; and the effect is to make one realize immediately how successfully modern gas appliances and fittings have been designed to form parts of a harmonious scheme of furnishing and decorating, and that they need no longer appear after-thoughts or excrescences, tolerated for their cleanliness, convenience, and utility, but disliked because they offended all who love harmony and fitness in the scheme of things.

These Westminster showrooms, of course, constitute a part only of a policy adopted by the Company to provide all the consumers—about 1,100,000 in number—throughout the 265 square miles of London and district which it now supplies, with commodious and easily accessible showrooms and offices at which they can select the gas appliances and fittings they require, and from which they can be given prompt and efficient service in their homes, offices, and business premises by skilled technical officers and well-trained workmen. As readers of the "Journal" are aware, new showrooms have recently been opened in Islington (at Seven Sisters Road), in Golders Green, and in Goodmayes. Others, it may be mentioned, are in process of construction in Kensington, Walham Green, Edgware, Wembley, and East Ham.

Progress of the Company.

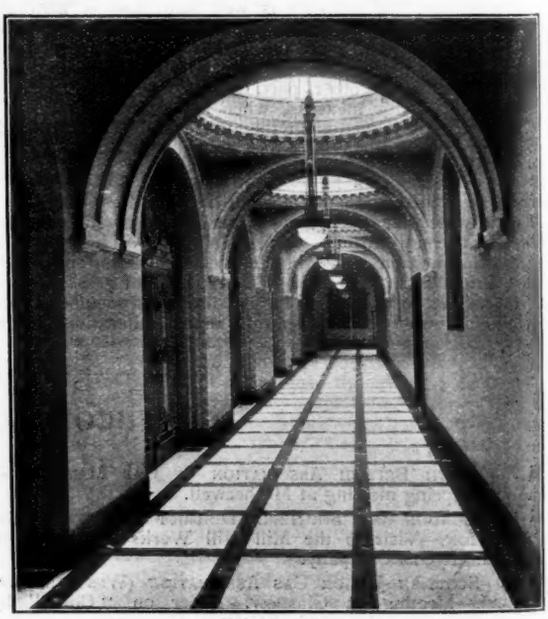
During the past 22 years the gas cookers, boiling rings, fires, and water heaters sold or let on hire by the Company increased by 1,400,000, or about 400 p.ct. Since 1903, the soot-fall in London has decreased by more than 50 p.ct., and—of supreme importance to health—the hours of sunshine have increased by 50 p.ct. There is still a vast amount to be done before London is as sunny as the countryside; but gas has already done much, and is steadily doing more, to bring about this ideal.

Showrooms, such as those now open to the public at Horseferry Road, where gas appliances can be obtained that combine the æsthetic with the practical, and the economical with the convenient, will help many a housewife and householder to solve the pressing problem of a peaceful atmosphere within the home, through the abolition of drudgery, and at the same time a purified atmosphere without, through the abolition of smoke.

The Showrooms Described.

The task of describing these excellent showrooms is a difficult one; but it is hoped that the following notes, aided by the photographs which we reproduce, will enable our readers to gain an idea of the general lay-out, and to appreciate with what care the Company have studied the comfort of their customers. The dignity of the entrance hall is demonstrated in one of the illustrations. Here there is a private telephone box for the sole use of customers, and the most ornamental pillar box that we have yet seen. Here also is the tablet in memory of those of the Company's men who died in the service of their country during the war.

On entering the showrooms, the consumer is shown by a pageboy into a waiting room—perhaps it would be better to term it a lounge—of spacious design. It is a wide room about 75 ft. in length, practically divided by two huge overmantels in marble. Over one is a bust of Murdoch, and over the other a bust of Winsor. Each is fitted with an appropriate inset gas grate, and lighted by two candle burners. The room itself is illuminated by seven semi-indirect fittings specially designed to harmonize with the general decorative scheme. There are round the room nine superb examples of gas fires fitted in marble surrounds of different patterns. These fires are finished in electro-silver, dark nickel, electro-copper, art copper-bronze, copper, pewter, and electro-gold. All the piping to these fires, by the way, is out of sight. Were it not for the efficiency of the staff in dealing with the customers, we could well understand their waiting for the sheer joy of it, for the lounges are redolent of comfort, and there is a writing table for consumers' use. In this room also there is a series of showcases in which are displayed in attractive fashion the various products resulting from the carbonization of coal.



Main Corridor.

Adjoining this lounge, and separated from it by an inquiry counter, is the sales staff department, in which room are all the district inspectors for the area of supply covered by the Westminster showrooms.

The Basement

The "basement" seems a crude term for the series of delightful rooms where the different appliances are shown. The excuse for employing it is that these rooms are underneath the main lounge. Having negotiated a marble staircase, one finds oneself in the fire section, where "purchase" fires in various finishes are set in suitable tiled surrounds. Here again no pipes are to be seen, so that the best effect is gained. In the next section sales cookers are exhibited. These are of

VIEW OF THE MARBLE STAIRCASE, SHOWING MURAL DECORATIONS AND CANDELABRA.

both the eye-level and the floor types, with white enamelled exteriors and nickel-plated finish. For demonstration purposes, all the stoves are connected to a gas supply.

Another section is devoted to a display of hire cookers. Then there is an hotel kitchen, in which are demonstrated carving tables, steamers, toasters, roasting ovens, &c. Of particular interest is a large central range of six ovens. Adjoining is a room where two café sets are shown. Beyond is a white-tiled boiler room containing a Spencer-Bonecourt gas-heated boiler, which serves for the heating of the showrooms, and at the same time is an outstanding example of the convenience, efficiency, and absolute cleanliness of such an installation.

Model Rooms.

A series of model rooms—comprising a bedroom, a dining-room, a library, a hall, a kitchen, and a bathroom—demonstrate with what excellent effect gas can be applied to lighting, heating, cooking, and water heating. We illustrate the model library and the bathroom; and when it is said that the other sections are equally attractive, it will be realized what a good display these model rooms make.

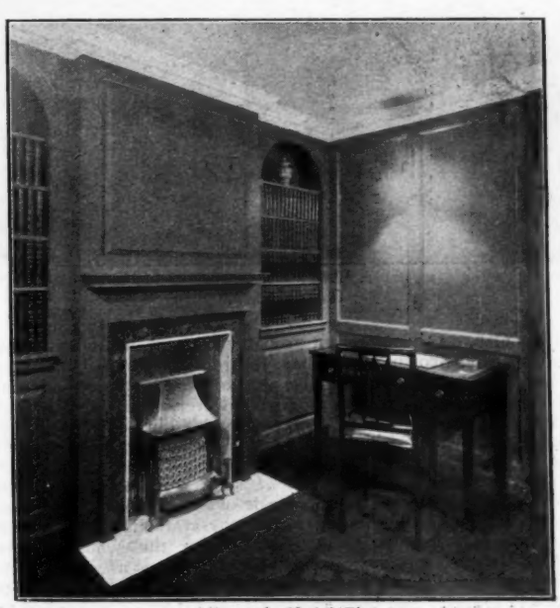
In the hire-fire selection room there is a showcase containing silk shades. Both the colours and the sizes of these shades, it is interesting to note, have been standardized after careful investigation of the dimensions which give the most efficient light. Another section is devoted to a display of coke boilers of various patterns; and adjoining this is a room in which gas coppers, geysers, circulators, and drying and airing cupboards are exhibited. Finally, there is a fittings sale room. The pendant lights are all switch controlled on the pneumatic system, and the main lights for the showrooms are also switch controlled. The lighting and the ventilating systems of the downstairs showrooms are all that can be desired.

It would be out of place to conclude this brief description without reference to the marble staircase leading from the hall to the board room. The beauty of this is indicated in our illustration.

Opening Ceremony.

The opening ceremony, which took place in the board room, was performed by Mr. O. W. Nicholson, M.P. for the Abbey Division of Westminster, supported by the Mayors and Mayor-

Bust of Winsor in Reception Lounge.

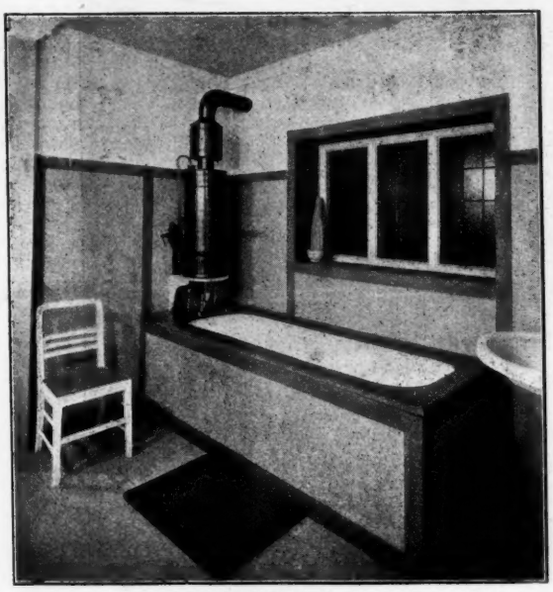


Library in Model Flat.

esses and Chief Officers of Westminster, Chelsea, and Lambeth, and many other leading citizens of those districts.

The visitors were welcomed by the Governor of the Company, Mr. D. MILNE WATSON, D.L., and other members of the Court of Directors.

With the Directors there were the Assistant General Manager (Mr. R. W. Foot), the Secretary (Mr. W. L. Galbraith), the Chief Engineer (Mr. T. Hardie), the Accountant (Mr. H. E. Ibbs) the Rental Superintendent (Mr. L. M.



Model Bathroom.

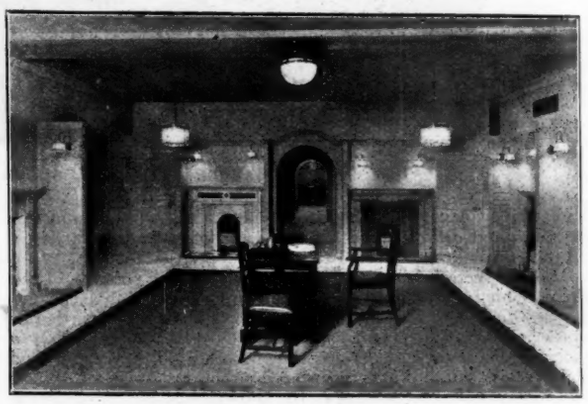
Simmons), the Chief Officer of Stores (Mr. W. McDowall), and the Controller (Mr. F. W. Goodenough), the Deputy Controller (Mr. Stephen Lacey), and the Senior Officers of the Gas Sales Department.

Mr. MILNE WATSON, having extended a welcome to Mr. Nicholson and the Mayors of Westminster, Chelsea, and Lambeth, expressed his pleasure at seeing so many in the old boardroom of the Gas Light and Coke Company. It was a venerable place, and perhaps they would bear with him if he touched upon its history. Gas was first made in London at the beginning of last century. It was interesting to note that Pall Mall was first lighted by gas in 1807, and that after 119 years it was still illuminated by the same medium. The Gas Light and Coke Company commenced its activities in a small way, and had, indeed, a hard struggle for existence in its early

Hotel Kitchen.

days. Gas, as those present probably were aware, was the invention of a Scotsman, William Murdoch, whose bust they would have seen, or would be able to see, in the showroom. The real founder of the Company, however, was a man named Winsor, a visionary who persevered with his schemes in the face of much opposition. It was the result of his efforts that the Gas Light and Coke Company obtained its Royal Charter in 1812. There was a portrait of Winsor in that room; and they would notice that by his side was a globe. Perhaps, suggested Mr. Milne Watson, this was symbolic of his vision that gas lighting would eventually cover the whole of the globe. In the early days gas was used solely as an illuminant, but since then the advance in its applications to heating, cooking, and industry had been enormous; and it was now applied to no fewer than 3000 trades. As for the Company, which in its beginnings paid no dividends for many years, it now employed 20,000 workmen, and had a capital of £33,000,000—sufficient indication that it had moved, and was moving, with the times. When it came into existence, the Company had Parliamentary powers to supply gas over a large area, as far, indeed as the City of York; but gradually, as was inevitable, other companies were set up around their own, limiting their area of supply. During the last thirty years, however, the Gas Light and Coke Company had incorporated other companies, and was now, he thought, the largest in the world. Certainly it was by far the largest in Great Britain. The Company had by no means neglected the interests of its workmen. They had a co-partnership scheme, in connection with which there were now 12,000 members, who held £500,000 of the Company's stock. They might ask what all this had to do with the new showrooms. His excuse was that they constituted what he might term the *locus classicus* of the gas industry. These showrooms had been reconstructed and redecorated, as it was felt essential to show the public that gas not only was highly efficient, but could be applied for all manner of purposes extremely artistically. A great deal was being heard about electricity, and what it could do. While he was of opinion that there was ample room for both the gas and the electricity industries, he thought it was the duty of the older industry to demonstrate to the public the capabilities of gas; and in their new showrooms they would be able to see economical gas fires and other general gas appliances and fittings to the best advantage.

Mr. O. W. NICHOLSON, M.P., said he fully appreciated the opportunity of visiting the new showrooms, and formally de-



"Purchase" Fire Selection Room.

claring them open. As Parliamentary representative for Westminster, he was naturally interested in the development of any industry in his constituency. One heard so much nowadays about the merits of electricity that it was good to see what gas could really do; and in this connection he endorsed Mr. Milne Watson's remark that there was ample room for both industries. The Gas Light and Coke Company was the largest gas undertaking in the world, and foremost in its methods. Research was most important in these days of scientific development; and it was excellent to know that the Company spent a great deal on research, which, he thought, would maintain it in its present high position. He hoped that the new showrooms would bring greater prosperity to the Company, and further benefits to its workpeople. There could be no doubt as to the great value of the co-partnership scheme, which could well be taken as an example by other industries. If co-partnership was more generally adopted, it would help enormously to bring together employers and employed.

The MAYOR OF WESTMINSTER remarked that he was glad to think that gas started on its career in Pall Mall, and that the chief offices of the famous Gas Light and Coke Company were situated in Westminster. Gas was most useful, and made the lives of all more pleasant. Speaking of the lighting of Westminster—which was stated to be the best lighted city in the world—he observed that Whitehall, which was illuminated by high-pressure gas lamps of 1800 c.p., was certainly an example of really good lighting. There were 99 miles of streets in Westminster, lighted by 4351 units; and of these no fewer than 3021 were gas lamps.

The MAYOR OF CHELSEA expressed his pleasure in assisting at a function which denoted the growth of a great industry. Gas was a blessing to the workers in their health and in their sickness, for it was used extensively in the hospitals; and he hoped that the fine forward policy of the Gas Light and Coke Company would meet with the reward which it so richly deserved.

The MAYOR OF LAMBETH said the fact that at one time he tested the illuminating power of gas for the City of Hull, increased his interest in the gas industry. Mr. Nicholson had

referred to the value of research; and he was delighted to know that the Gas Light and Coke Company paid close attention to this branch of their work.

In reply to a vote of thanks to the Governor and the Court of Directors of the Company, proposed by the MAYOR OF WESTMINSTER, and seconded by Mr. NICHOLSON, Mr. MILNE WATSON remarked that the Company had done something to purify the air. Since 1903 there had been an increase of 50 p.ct. in the hours of effective sunshine in London, and a decrease of 50 p.ct. in the amount of impurity in the atmosphere; and there was no doubt that gas had contributed largely to this improvement.

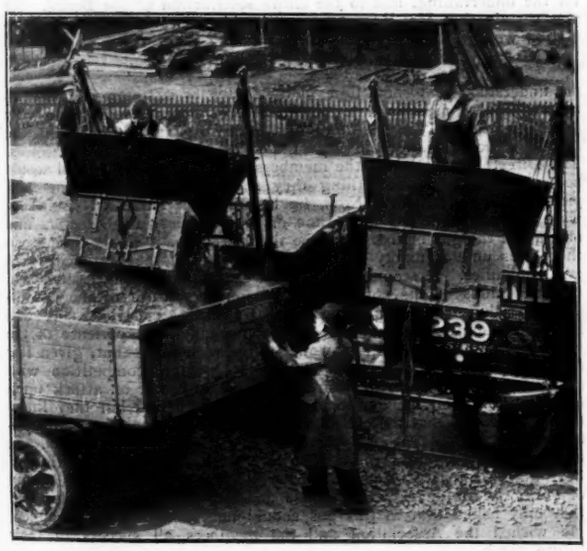
After the ceremony, tea was served in the large dining hall, following which the visitors made a tour of inspection of the showrooms and some of the spacious offices occupied by the headquarters staff of the Company.

NEW LOADING HOPPER.

Saving Time and Money.

On Wednesday last a device which should do something to lessen the cost of coal to the consumer was shown at Uxbridge before a distinguished gathering of Government officials, railwaymen, and contractors. This is a portable hopper manufactured by Smith's Patent Hopper Transport Company, Ltd., of 9, Duke Street, Cardiff.

The hopper, which we illustrate, is made of steel, and though lightly constructed is capable of holding about 25 cwt. of bulk material. It is fitted in five minutes to the side of an ordinary railway wagon, in any position to allow lorries or carts to be loaded without delay. An adjustable steel framework consisting of three parts—two booms and a gantry which forms a double runway for the wheels of the hopper—is clamped to the wagon side. The hopper is then hoisted into place, and the runway adjusted to the required height. The hopper has a hinged door controlled and locked by a lever easily accessible from inside the truck; and when the hopper is detached from its supporting gear, it can be wheeled along the ground.



A Photograph taken at the Uxbridge Demonstration, showing a Smith Hopper being discharged into a Lorry.

With this device, loading from the railway truck into the hopper can go on while the lorry is making its journey. On the return of the empty lorry, one movement of the control lever transfers the load of material in the hopper direct into the lorry. A load of 3½ tons can be transferred in a few moments; the lorry then proceeding on its way with a minimum of delay.

Hitherto, lorry and driver remained idle while the shovellers filled the vehicle; and when they were away, the shovellers stood idle. By the new system, both are employed all the time, with the result that something like 60 to 70 tons of material are handled in the same time as twenty tons are shifted by the old system. A lorry loaded in the ordinary way is idle for approximately 65 p.ct. of the working day; and the same time is wasted by the shovellers.

THE UXBRIDGE DEMONSTRATION.

Last Wednesday the Great Western Railway, in conjunction with the Middlesex County Council, arranged to have a quantity of 2-in. granite road material conveyed from the sidings at Uxbridge High Street to a point where road repairs are in progress. Two gangs of men were employed, one set using old methods, and the other the Smith hopper. The men working on the latter system were able to move over twice as much material as were the others. There is no doubt that demurrage could be diminished by the use of these hoppers, and haulage costs reduced to a minimum.

In conversation with some of the workmen at the Uxbridge demonstration, we were told that the new system appealed to them greatly. They were paid piecework rates, and earned more money.

The results achieved at the demonstration were as follows:

Work commenced at 8 a.m., and continued till 11.30 a.m.	3½ working hours
Distance of lorry's journey	1½ miles

With Six Hoppers and Six Shovellers.

Average time of lorry being loaded on siding	6 mins.
Total tonnage discharged from trucks	54 tons
Total running time of lorry (being 64 p.ct. of working time)	2 hrs. 14 mins.

Old Method with 4 Men.

Average time of lorry on siding	48 mins.
Total tonnage discharged	17 tons

As stated above, work was commenced at 8 a.m. Owing, however, to the lorries which arrived for use with the hoppers being more than 18 in. higher than the trucks which had to be discharged, over 20 minutes was taken in re-adjustment of the six hoppers. This was unforeseen, and meant a considerable setback to the demonstration; the output being decreased thereby by 10 tons. Had this not happened, the output for the 3½ hours would have been 64 tons.

As an experiment, a Fordson tractor with low trailer was used, and this vehicle slowly passed under each hopper, receiving a discharge from each, and clearing the siding in one minute. It will be noted that the average time of the lorry on the siding when used in conjunction with the hoppers was 6 minutes. Had the lorries been of a more adaptable type, requiring less manœuvring, this average could have been considerably reduced, as shown in the instance of the Fordson tractor.

OTHER TESTS.

Other tests have been carried out with a 6-ton tipping lorry. When loaded by hand-shovelling, a maximum of 36 tons per day over a moderately short journey was all that could be discharged. The same lorry working with five patent hoppers was able to move 125 tons of bulk material during the day, and working over the same journey.

When loaded from five hoppers, a 5-ton lorry can, from the moment of arrival alongside the railway wagons, move off on its new journey within four minutes.

Safety in Mines Research Board.—The presence of blackdamp in a mine atmosphere, in sufficient proportions, will prevent the propagation of flame in a mixture of firedamp and that atmosphere; and it is important to know what these proportions are. An investigation of this question forms the subject of a paper by H. F. Coward and F. J. Hartwell on "The Limits of Inflammability of Firedamp in Atmospheres which Contain Blackdamp" (Safety in Mines Research Board Paper No. 19, H.M. Stationery Office, Adastral House, Kingsway, London; price 6d. net). The investigation covers the question of the extent to which the introduction of carbon dioxide alone can render a firedamp explosion impossible. The results can be summarized as follows: No self-propagating inflammation is possible in any mixture of methane with atmospheres consisting of air mixed with (*a*) 25 p.ct. or more of carbon dioxide, or (*b*) 38·5 p.ct. or more of nitrogen. The amount of blackdamp that must be mixed with air to form an extinctive atmosphere for methane flames lies between these percentages, according to the proportions of nitrogen and carbon dioxide in the particular sample of blackdamp

SOUTHERN ASSOCIATION OF GAS ENGINEERS AND MANAGERS.

ANNUAL GENERAL MEETING.

[In the first part of his Presidential Address, Mr. Robertson, of Bristol, draws a vivid comparison between the gas industry of fifty years ago and of to-day, laying special stress upon its organization and what he tritely terms "the discovery of the consumer." He examines the effect of these facts upon the circumstances of the men who serve the industry, and passes to the present political situation. The second part shows how the Bristol undertaking has coped successfully with changing conditions and increased demands upon it. Cheerful philosophy is apparent throughout the address. Another feature of the meeting was a concise, but weighty, review by Sir Arthur Duckham of the present position of the gas industry, especially as regards the Electricity Bill and the Coal Report.]

The Annual General Meeting of the Association was held on Tuesday of last week, at the Hotel Cecil, Strand, W.C., under the Presidency of Mr. R. ROBERTSON (Engineer of the Bristol Gas Company), who delivered his address.

LUNCHEON.

Previous to the meeting luncheon was served, whereat the PRESIDENT was in the chair, and was supported by Sir George E. Davies, the Deputy-Chairman of the Bristol Gas Company. There were also seated at the top table Mr. C. F. Botley (President of the Institution of Gas Engineers), Mr. P. G. G. Moon (Immediate Past President of the Association), Mr. Thomas Hardie (Vice-President), Sir Arthur Duckham, Mr. Frank Prentice (President of the Eastern Counties Gas Managers' Association), Mr. Daniel Irving, Dr. T. Howard Butler, of Bristol, Mr. W. M. Mason (Manager of the "B.C.G.A."), Dr. E. W. Smith, Mr. W. T. Dunn (Secretary of the Institution of Gas Engineers), Mr. S. E. Halliwell (Secretary and Commercial Manager of the Bristol Gas Company), Mr. F. E. Cooper (Secretary of the Gas Companies' Protection Association), Mr. W. L. Westbrook and Mr. J. H. Goldsmith (President and Hon. Secretary respectively of the London and Southern District Junior Gas Association), and Mr. H. C. Smith (Hon. Secretary of the Southern Association).

After the honouring of the Loyal Toast,

Mr. T. HARDIE proposed "The Visitors," among whom, he remarked, was Sir George Davies. Always welcome at meetings of the gas industry, Sir George was specially welcome that day, inasmuch as he was present as the Deputy-Chairman of the Company their President served. It was to be hoped that he would carry away with him from the meeting the happiest recollections; and certainly he would feel even prouder than he had ever felt before of his Engineer. ["Hear, hear."] It would not be too much to say that Mr. Robertson was beloved of them all; that his abilities and his qualifications as an engineer they all appreciated; and that his quiet humour was thoroughly enjoyed by them, though they could not hope to copy it. The gas industry had been fortunate in obtaining the active help of some whose interests were not mainly gas. The assistance of these gentlemen was of incalculable benefit, because what they had to say about gas was listened to by the public perhaps with greater attention than was paid to the words of those who were biased in favour of gas. Sir George Davies was one of these gentlemen. Though he was the Deputy-Chairman of the Bristol Gas Company, he had a great many other interests. He was the head of a very large manufacturing concern; he had been for many years an Alderman of the City of Bristol; he was a Magistrate; he was a Director of the Bristol Water-Works, and of many other industrial undertakings; and he was also the President of the Bristolian Society in London. It was this busy man who had come to the meeting that day to give his support to the President. [Applause.] He had also, as they well knew, given great support to the gas industry generally, through the work he had done in connection with the British Commercial Gas Association. Among the visitors they also had the President of the Institution of Gas Engineers, who was one of the most valued members of their own Association. Mr. Botley had taken this high office in a year which had been most important to the gas industry—a year in which the Government Bill had been brought in by which their chief competitor was to be strengthened, and by which it was hoped to cheapen the production of electricity and make it more available throughout the country. They were all very pleased indeed to think that, at such a time, they had at the head of the Institution of Gas Engineers one so well equipped as Mr. Botley to look after their interests and the interests of their undertakings. ["Hear, hear."] There were other visitors whom he did not intend to enumerate, but most of whom were well known to the members; and he could only say they were very glad indeed to see them there.

Sir GEORGE DAVIES, responding, thanked them all for their very kind welcome, and the Vice-President for the words he had used in proposing the toast. Assembled there as gas men, they must recognize that they were meeting at a time of some anxiety to the gas industry, which threw a great responsibility upon both Directors and officials; but he thought that, in spite of the threatening clouds over them, they might congratulate themselves upon being members of a really successful industry, and an industry which was of the very greatest importance to the country. They all realized that the development of the gas industry in recent years—more especially within the last ten or twenty years—had been almost wonderful. It had been most satisfactory to everybody connected with it. There certainly never was a time, amid all the threatenings, when gas was more universally used, or was employed to the same extent as now for cooking and heating. This satisfactory result, he believed, was due to the good service which had been given both to and by the gas industry. As a Past President of the British Commercial Gas Association, he thought that organization might fairly claim great credit for the development which gas had enjoyed during recent years. ["Hear, hear."] The manner in which the "B.C.G.A." had brought the merits of gas before the public, and the additional service rendered by its regular meetings, had kept Directors up to the mark in realizing the duties of the responsible positions in which they had been placed in connection with the industry. But good development by itself would be a poor thing, unless good service followed; and he thought they had to recognize in the first place that the success attained was due to the largely improved appliances generally, and to the excellent work that had been done on the technical side and by the constant meetings and conferences which were held by the engineers and others connected with the industry. They knew, of course, the work that had been done by the National Gas Council; but especially that day they wanted to recognize the value of the sectional meetings of engineers, who were ever ready to help one another by imparting information, not merely for their own benefit, but for the benefit of the industry as a whole. He congratulated the Southern Association upon the fact that they had behind them a record—of which they were justly proud—of fifty years of usefulness; and, as a Director of the Bristol Gas Company, he was delighted that they had on this occasion chosen as President their respected Engineer, Mr. Robertson. He was glad to have this opportunity, on behalf of the Bristol Gas Company, of expressing their appreciation of the excellent work that Mr. Robertson had done for the undertaking, and to the entire satisfaction of the Board. He was certain that Mr. Robertson, as President, would guide the Association well.

INVITATION TO BRISTOL.

He understood that some time in the spring or summer the Association wished to meet in a provincial centre; and it would be a very great pleasure to the Directors of the Bristol Gas Company if the members would visit their city at a time convenient to themselves. The Directors would give the members a hearty welcome, and would be delighted to do everything they could to make the visit both pleasant and profitable. Now, he had already remarked that they were meeting that day at a time of some anxiety to Directors and officials of the gas industry; but he thought, also, it was a time when there was undue anxiety on the part of many of the shareholders in gas companies. It seemed to him that they had an exaggerated idea in their minds of the possible effect upon the future of the gas industry of the Government proposals in regard to electricity. It was his belief—and he thought that those who had had experience of the working of gas undertakings would agree with him—that, given fair treatment, gas would continue to hold its own in competition with electricity. None of them desired to make any sort of attack upon electricity or upon the development of that industry; but they knew (and it was well that they should try to bring it home to the authorities whenever they had an opportunity of doing so) that gas was, and always must be, a far more efficient agent for the distribution of heat than electricity could be. They believed that there was plenty of room for the development of gas and electricity side by side; and they only asked that in this gas should not be unduly handicapped. He wished the Association and the members all success in their future work.

Mr. C. F. BOTLEY said it was his privilege to submit the toast of "The Southern Association of Gas Engineers and Managers"—naturally a very congenial task. The Association, as Sir George Davies had reminded them, had recently celebrated its jubilee; and this, in itself, was a record of many years of usefulness. But the Association also had the distinction of being the largest District Association; and this, of course, must be of some importance in the work which it did for the industry. The Association had been extraordinarily fortunate both in its Secretaries and its Presidents; and high among the latter would rank their friend from Bristol, and the gentleman who in the natural course of events would follow him. ["Hear, hear."]

BE PREPARED.

If he might be permitted, he would like to offer a few remarks upon two subjects which would be in the minds of all of them, and which could not perhaps be too well ventilated. First of all, there was the very comprehensive and courageous document of the Royal Commission on Coal. While there were many things in that report which perhaps they would rather not have seen there, there were also many things which they could usefully study, as a guide to what might lie in the future. But his principal point that day was that, as the coal industry had to be put upon an economic basis, there might be influences which would result in trouble; and it would therefore be wise for those who were responsible for keeping the public in a large measure furnished with light, heat, and power to see that they were well supplied with the requisite raw material and other stores. Coming to the question of electricity, he had been gratified to read in "The Times" of the previous day an article by a scientific correspondent in which, he believed for the first time, adequate acknow-

ledgment was made of the great technical advances which had been accomplished by the gas industry. In such an assembly this was of importance, because, after all, without being egotistical, it was through the members of this and other similar Associations, together with their friends the chemists and those of the manufacturers who regarded things from a broad point of view, that the position which the industry occupied to-day had been reached. And if the "writing on the wall" meant anything, they had got to go a good deal further than they had so far gone. They had to equip themselves to meet intensified competition. It was not a question—to use an expressive phrase—of the gas industry having "got the wind up." The steps that had been taken by the industry were purely with a view to seeing that gas got fair play. They would have been very remiss, surely, if they had not done their best to ensure that they were not unfairly treated; and it was to this aspect of the matter that all the criticism of the gas industry was directed. He sometimes thought there was only one other public supply which compared with gas in lack of appreciation on the part of the people and the Government—the water supply. Certainly they in the gas industry did suffer very unjustly from the want of proper appreciation; but the article in "The Times" to which he had referred seemed to encourage the view that they were at last beginning to be appreciated. There were doubtless paragraphs in the report of the Coal Commission which pointed in the same direction. Coming back to the toast of the Southern Association, when he looked back he felt it was in the time of their good friend the late Mr. James Helps, of Croydon, that the impetus was given to the Association to push on and to accomplish those many useful things that it had done. The Association had every reason to be proud of its record; and he felt quite sure from what he knew of the members that in the future it would be even more useful to the industry than it had undoubtedly been in the past. It was a pleasure to couple with the toast the name of their friend and President, Mr. Robertson, of Bristol.

The PRESIDENT, in the course of his reply, remarked that reference had been made to the Association's age and size; but however important the quantitative standard might be, the qualitative standard was even more so. As to the qualitative standard, he "could a tale unfold" as well, but would spare the blushes of many members present, and would merely repeat that, when the Institution of Gas Engineers wanted a President, they went to the Southern Association, who gave them one of the best. They congratulated both Mr. Botley and the Institution, and wished them every success.

THE TWO PRESCRIPTIONS.

Allusion had been made to two documents of great importance to the gas industry. Both were due to the fact that the industries of the country in general, and the coal industry in particular, were in a bad way, and very sick. The doctors had been called in; and these were the prescriptions. It was a very old delusion that economic evils could be remedied by Act of Parliament and State intervention. Those of them who had had experience of State intervention—and the gas industry had some during the war—were inclined to think that when the State was called in, the last condition of the patient was apt to be worse than the first. The pity of it was that there was nothing in either of these prescriptions that could not have been done, and done much better, by the interests involved themselves. Fortunately for the gas industry, it had never been in a better position to look after itself than was the case at the present moment. The recently published reports of gas undertakings throughout the country told a consistent tale of expansion and progress; and nothing would stay this progress of the industry, or even cause it to hesitate, providing they all "did their bit." As had already been pointed out, associations such as their own could do a great deal. In fact, the backbone of the gas industry was really the District Association, because of the intimate connection which the District Association had with the corporate life of the industry, and the facilities it afforded for the discussion of problems, the interchange of experiences, and the cultivation of that spirit of helpful comradeship which had made membership of the gas profession something to be proud of. The main lesson that could be derived from the matters which were uppermost to-day was that there was no room for "slackers" in the gas industry—whether Directors, officials, or workpeople. If they all did their best, there would be no difficulty in the gas industry meeting any trouble that might come along. The members would wish him to thank Sir George Davies for his kind invitation to the Association to visit Bristol. He (the President) could only add, on behalf of his colleague Mr. Halliwell and himself, that they also would do their best to make the visit happy.

BUSINESS MEETING.

An adjournment was then made to another room, where the business meeting was held; Mr. R. ROBERTSON in the chair.

LOSSES BY DEATH.

The PRESIDENT, after notifying the receipt of apologies for absence from several members and Presidents and Secretaries of kindred Associations, said it was with deep regret that he had to announce the loss by death of two valued and esteemed members—Mr. C. A. W. Codgbrook, of Berkhampstead, and Mr. J. Fisher, of Tottenham.

As a mark of respect, the members stood silently in their places.

CONFIRMATION OF MINUTES.

On the proposition of the PRESIDENT, the minutes of the last meeting, as published in the "JOURNAL," were taken as read, and confirmed.

ANNUAL REPORT.

The report for 1925, as circulated among the members, was also taken as read, and its adoption moved by the PRESIDENT.

Mr. D. T. LIVESEY (East Grinstead), in seconding the motion, said that, as a member of over thirty years' standing, he thought the Association was to be congratulated upon its yearly reports, and on the good work it had accomplished. Reference had been made earlier in the proceedings to the spirit of comradeship which existed. It had been one of the outstanding features of the Association that the manager of the smallest works in the district could come to the meetings and submit his difficulties, and have placed at his service the combined experience of the members.

The report (which was adopted) included the following items:

The General Committee have pleasure in presenting the report of the proceedings of the jubilee year of the Association. The year under review was marked by a continuation in the growth of membership. The Association is now the largest of the District Gas Associations, with a total membership of 305 ordinary and 5 honorary members. The papers presented by the members have been conspicuously fertile in imagination, and sound in the practical principles of gas manufacture and distribution; and they have furnished the meetings both inside and outside with opportunities for useful and intelligent discussions.

The Association has been honoured by the election of one of its members, Mr. C. F. Botley, M.Inst.C.E., of Hastings, to the Presidential Chair of the Institution of Gas Engineers. The good wishes for a successful year of office are accorded to him by the members. Mr. C. F. Botley has always taken a very active and live interest in the affairs of the Southern Association. The more important duties now pertaining to his elevated office will assuredly be wisely and courageously administered.

The Committee deeply regret having to record the death of the following members: Mr. A. F. Browne, Worthing; Mr. W. J. Budd, Melksham; and Mr. H. E. Jones, Westminster.

The audited accounts for the jubilee year show a surplus of £6 15s. 5d., which may be considered as satisfactory, in view of the additional expense incurred. The credit balance carried forward at Dec. 31, 1925, was £82 12s. 6d.

SIXTH ANNUAL REPORT OF THE COMMITTEE OF THE EASTERN DISTRICT.

During the year eleven meetings have been held, nine in London, with an average attendance of 28, and two county meetings, at Tonbridge in March, and at Crowborough in April. At Tonbridge, Dr. Smith gave very interesting and instructive lectures on coke production, cutting, and grading for domestic use. Examples of newer types of coke grates, slow combustion stoves, and water heaters, were erected for temporary use by Mr. J. Donaldson. Both afternoon and evening lectures were well attended. Most of the members took the opportunity of giving their staff representatives a better knowledge of the possible uses and advantages to be obtained from this valuable residual. At Crowborough, members viewed both the gas-works and (gas) electric generating station, with considerable interest, and were impressed with the economical advantage of supplying both sources of light from one station.

Interest in the discussion of markets for residual products has been well maintained; and the information obtained by members from time to time has been of considerable value to the companies they represent. Valuable and instructive papers have been presented and discussed on "Results of Generating Electricity with Gas Engines," "Coal Mixing for Coke Production, Cutting and Grading Same for Domestic Use," "Gas Production by Vertical Chamber Ovens," "Water Supply to Gas-Works," and "Current American Gas Practices."

Good use has been made of the question-box for obtaining information as to the working of plant and current practice in dealing with knotty points that arise at times in the conduct of business.

The Committee appreciate the support they receive from those who attend regularly, but feel that numbers should be increased, with advantage to both officers and companies.

DISTRICT OFFICERS ELECTED.

Chairman.—Mr. J. Terrace.
Vice-Chairman.—Mr. C. Valon Bennett.
Committee.—Messrs. A. H. Andrews, W. H. Bennett, A. Caddick, T. Carmichael, G. M. Gill, L. G. Humphreys, S. Lacey, L. J. Langford, C. T. Price, R. Ruthven, C. H. Rutter, F. Smallbone, H. C. Smith, A. W. Sumner, J. S. Thorman, and W. H. Warren.
Hon. Secretary.—Mr. L. Trewby.
Representative Members to General Committee.—Messrs. C. H. Rutter and F. Smallbone.

F. SMALLBONE, Chairman.

SIXTH ANNUAL REPORT OF THE COMMITTEE OF THE WESTERN DISTRICT.

During the year nine meetings have been held, one each at Bridgwater, Minehead, and Plymouth, and six at Exeter. The attendance at the meetings has been about the same as previous years; the average being 15 per meeting. Most subjects of importance to the gas industry have been discussed, in addition to the usual commercial matters, all of which have proved very interesting to those attending the meetings.

It is hoped, in the coming year, to revive the discussion of matters of technical interest; and members are asked to make use of the question-box, if they have not sufficient information to place before the other members in the form of a paper.

The return of the commercial cards has not been up to the usual standard; and members are requested to give this matter their attention, as it is the only means of obtaining accurate information respecting the movements of the residual markets.

Reviewing the year generally, it has been as successful as its predecessors; and it is hoped the coming year will not fall below the standard already maintained.

The following members were elected as District Officers to serve during the coming year:

Chairman.—Mr. C. G. Dawson.

Vice-Chairman.—Mr. J. H. Cornish.

Committee.—Messrs. J. Armstrong, W. E. Dean, S. E. Halliwell, H. Higham, P. S. Hoyte, J. Harger Pye, H. E. Riley, J. Taylor, W. P. Tervet, T. P. Vince, and J. Wesley Whimster.

Hon. Secretary.—Mr. J. B. Cattle.

Mr. J. W. Whimster has been elected as representative on the General Committee in the place of Mr. W. N. Westlake, who retires after having served three years.

C. G. Dawson, Chairman.

New Members.

The Hon. Secretary (Mr. H. C. Smith, of Tottenham) read the following list of names of new members, who were elected on the proposition of the President, seconded by Mr. T. Hardie (London):

Mr. William Charles Cooper, of Crowborough.
Mr. Cyril Murton Croft, of Wandsworth.
Mr. Godfrey Warburton, of Tottenham.
Mr. George Le Boutillier Diamond, of Brighton.
Mr. George William Ellis, of Berkhampstead.

Representative on the Institution Council.

Mr. P. G. G. Moon (Bournemouth) said it had become a recognized custom with the Association that each year the President for the time being should be elected as the representative of the Association on the Council of the Institution of Gas Engineers. They would agree that it was a very wise custom; and they certainly would not wish to depart from it on this occasion. He had much pleasure, therefore, in proposing that Mr. Robertson be their representative—a position he would very worthily fill.

Mr. A. E. Broadberry (London), in seconding, remarked that he was quite sure the Association would be very well represented by their President. Speaking as a Past President of the Institution of Gas Engineers, he could assure Mr. Robertson that he would receive a cordial welcome from the members of the Council, with whom he would render good service in furthering the interests of the industry generally.

The resolution was unanimously agreed to.

Amendment of Rule 17.

Mr. P. S. Hoyte (Plymouth) proposed: "That Rule 17 be amended by the addition of the following: 'Applicants for re-election, who have previously ceased to be members, shall accompany their applications by payment of any arrears that may be outstanding.'" It said a good deal for the foresight of those who originally drew up the rules, that it had so seldom been found necessary to make any alterations or additions to them. The reason for the present amendment was fairly obvious. What it amounted to was that if any members had wandered from the fold, and wished to return to it, they should not be made to "pay their footing," but any arrears outstanding should be cleared off.

Mr. W. H. Bennett (Redhill) seconded the proposition, which was agreed to.

Presentation to the Immediate Past President.

The President said it was now his privilege and very pleasing duty to convey to the retiring President, Mr. Philip Moon, on behalf of the members, their very best thanks for the services he had rendered during his year of office. It had been a memorable year in many ways. Not only had the ordinary programme been a memorable one, but the jubilee celebrations had also taken place. The Association was extremely fortunate in having a man of Mr. Moon's abilities at its head during such a time. His Presidential Address had set-up a standard which it would be exceedingly difficult for succeeding Presidents to reach; while the visit to Bournemouth was one of the most enjoyable and interesting that the members had ever experienced. In tendering Mr. Moon their best thanks, he asked him to accept a silver salver, as a memento of his year of office. Had it been of gold, it would more truly have symbolized their feelings towards him. They sincerely hoped the gift would, for many long and happy years to come, remind Mr. Moon of the deep sense of appreciation and gratitude and affectionate regard which he had won from every member of the Association. [Applause.]

Mr. Moon said that the gift, and the kind words by which it had been accompanied, came as a pleasant climax to a happy year of office, during which he had received the loyal support of the Committee and of every member of the Association, in addition to the help of their excellent Hon. Secretary. That he would enjoy these advantages, he had known beforehand. What, however, he had not realized in advance was that he would have the backing and support of one whose charming eloquence and witty speeches would enliven and embellish every meeting that was to take place during his year of office. The salver would always serve to remind him of a very happy time; and he thanked them all most sincerely for it.

PRESIDENTIAL ADDRESS.

Of Mr. R. Robertson, of Bristol.

I should like to thank you for the honour you have conferred upon me, and for the compliment you have paid the Company I have the privilege of serving, by electing me to be your President for 1926.

Lord Rosebery once said that there are two occasions upon which men make speeches—when they have to say something, and when they have something to say. Inasmuch as occasions like the present come within the former category, and the President has to say something to justify his existence, there is little to commend the practice; and, I presume, it is only tolerated because once in a while the occupant of the Presidential Chair has something to say. A glance through the records of this Association shows that it has been particularly fortunate in the number of Presidents who have had something to say; and our immediate Past President was a

THE PRESIDENT,

Mr. R. Robertson, of Bristol.

Served apprenticeship to mechanical engineering, and had 16 years' general experience with various engineering firms. Appointed Chief Draughtsman to the Bristol Gas Company in 1905; Superintendent of their Canons' Marsh Works in 1907; succeeded Mr. D. Irving as Engineer in 1918; at present Engineer and Works Manager.

notable example, for he had not only something to say, but was singularly well qualified to say it. It would be contrary to the Law of Averages for this to happen two years in succession, and I have, therefore, to crave your indulgence on behalf of a President who is only able to say something..

The Outlook.

Last year, we celebrated the completion of 50 years' run of life as an Association; and a few reflections may therefore be permitted upon the outlook at the beginning of another lap. In the Commemoration Brochure, the following suggestive passage occurs:

> To have existed for 50 years is, in itself, a complete justification of the hopes and expectations of its founders. If, during that time, the developments in the manufacture and distribution of gas, and a consideration of their concomitant problems, have shown the need for such an Association—and this they certainly have—then the era upon which it, with the gas industry, is now entering must more than ever test its vigour and vitality in coping with the increasing number of problems—technical, commercial, administrative, and economic—with which the industry is faced.

The question naturally arises: In what way does the industry of to-day differ from what it was, and how do the changes which have taken place affect those who are now responsible for carrying on its affairs?

Newbigging's Golden Rules.

Turning to Thomas Newbigging's "Handbook"—a work which may be said to reflect the outlook and practice of 50 years ago—we find four "Golden Rules for Gas Managers"—viz.:

> Keep up the heats of the retorts;
> Keep up the water in the meters;
> Keep down the pressure in the mains during the daytime;
> Keep down the arrears in the gas ledger.

At first sight, these would appear to be about as useful to the gas manager of to-day as the Decalogue would be to a Bow Street Magistrate; and it is interesting to speculate upon what the gifted author would have to say if he were with us to-day, and asked to bring them up to date. Being a philosopher, as well as an engineer, he would doubtless proceed to show that, just as the underlying principle of jurisprudence has not changed in 3500 years, so the underlying principle of good management has not changed in 50, and that the "Golden Rules"—with certain qualifications—are as applicable to-day as they were when first enunciated 55 years ago.

He would show that the underlying principle of all four rules

was control—control of heats, control of registration, control of pressures, and control of accounts. It would then be easy to show that what the gas manager of to-day requires is also control—control of the materials of manufacture and the materials of construction; control of the various processes at every stage, so that he may have control of the quality of the products; control of the pressure of the gas right up to the consumer's apparatus, and control of that as well; control of the revenue and expenditure, so that the balance-sheet will stand the Micawber test; and last, but not least, control of himself.

PAST AND PRESENT.

The need for qualifications and the elaborate character of these, however, imply differences between the industry of to-day and of yesterday; and the outstanding difference lies, I think, in the greater complexity of its affairs. On the practical side, the changes which have taken place are reflected in the literature of the industry; and it is only necessary to compare (say) "Newbigging's Handbook" of 1870, or "King's Treatise" of 1878, with the text-books of to-day—or to compare the "Transactions" of the Technical Associations of the two periods—to realize how great these changes are. On the administrative side, the organization of labour on national lines, State interference—sometimes benevolent in the form of welfare legislation, and sometimes otherwise—the instability of economic conditions due to the shock of war and its aftermath, competition, the discovery of the consumer, the intrusion of politics, have all added complexity to the problems of gas management, and called for corresponding changes in outlook and methods.

CORPORATE ORGANIZATION.

The principal change of method has, no doubt, been in the direction of corporate organization. The Technical Association, which first came into being in 1861—appropriately enough in the land of Murdoch—had for its object, if we take that of our own Association as an example, "... intercourse among gas engineers and managers ... on all matters of gas engineering and manufacture;" and until the end of the century it not only served this purpose, but served also as the general utility agency for any odd job which required to be done for the industry.

In time, the common interests on the commercial side of the business led to the formation of the commercial section, the pioneers in this direction being the Manchester District Association, in connection with which the first Commercial Section was formed in 1902. Meanwhile, the growing need for organized effort to watch the common interests affected by State legislation, and the aggression of civic and industrial corporations, led to the formation, in 1898, of the Gas Companies' Protection Association, the objects of which are:

> To protect the property, revenues, rights, powers, and privileges of gas companies in the United Kingdom; to advise members on legal and other questions arising in connection with the carrying on of gas undertakings; and generally to do all such acts as may be necessary or expedient for the promotion or protection of such objects or any of them.

The discovery of the consumer and his thousand-and-one prospective uses for gas, marked the beginning of another phase; and the need for organized educational and publicity propaganda began to be felt. In 1912, the British Commercial Gas Association was formed; and the universality of the want which it supplied is indicated by the number of claimants to the honour of being the first to suggest such a thing—reminding one of that other controversy as to the identity of the individual who won the war.

Other national problems—legislative, economic, and industrial—from time to time arose, which neither the Institution of Gas Engineers nor the Gas Companies' Protection Association was quite competent to deal with—the one because of its limited powers, and the other because of its limited representation. During the war, the frequency with which such problems arose, and their urgency, led to the formation of the National Gas Council and the Gas Employers' Federation; and for the first time the gas industry of the United Kingdom, as a whole, was provided with a representative executive duly elected and empowered to promote and defend its interests. We are to-day reaping the benefits of this; for the organized forces of the gas industry are now rendering the greatest possible service, not only to the industry, but also to the State, by well-directed efforts to prevent the country from being committed to one of the greatest gambles since the South Sea Bubble—the politician's version of the Electricity Commissioners' scheme—and it is to be hoped that the present-day bubble has been effectively pricked before any harm has been done. It is only necessary to refer, further, to the Special Committees from time to time appointed to deal with particular matters, to the Coke Committees and district tar schemes, and to the more or less independent agencies (*e.g.*, the Sulphate of Ammonia and the Benzole Associations), to realize the extent to which the organization of the industry has been carried.

It is true there is a certain lack of co-ordination, and something peculiarly British, in the way in which the various bodies referred to have come into being and are now linked-up together. Even in the matter of housing, independence and co-operation are curiously intermingled, and compromise pervades the atmosphere. But while a passing regret may be expressed for the vanished housing scheme which was to provide an All-Gas Home comparable with the homes of other Industrial and Professional Institutions, there is no desire, and no need, to revive the reconstruction controversy of eight years ago, for the success of the particular line of development then adopted has justified itself and (to quote McAndrew)—

> "Leaves me nae doot for the machine,
> But what about the man?"

THE MAN.

In the first place, it is well to remember that the province of the organization is limited to matters more or less common to the industry, and while it can help enormously, it cannot take the place of the man on the spot in dealing with the local problem or the local setting of the national problem. The constructional problem at the works; the problem of the district supply; the problem of the local consumer—how to get him and how to keep him; the problem of how to meet local competition, and how to work amicably with the local authorities and other public services; the problem of labour—how to promote friendly relations between employer and employee; and, above all, the problem of the local atmosphere—which sometimes counts for more than statutory rights or even the price of gas; these are the problems which confront the man on the spot.

But he is all the better able to tackle his job with the machinery of the organization behind him; and this implies a respect for the principles upon which the organization has been built, and a definite mental orientation in the direction of the common interests. When the machinery has failed, it has invariably been due to the failure of the individual to realize this; and it is his fault that "progress halts on palsied feet" in directions in which the industry might benefit by still further organization.

If we may adopt the saying of Lord Leverhulme about Labour—"the individual is the despair of the pessimist and the hope of the optimist"—so each, according to his disposition, will regard as near or far away the consummation of the co-operative ideal when even coals will be bought, and coke and tar sold, by and for the industry. It is obvious, therefore, that it is still the man who counts, and that there is as much need for vitality and as much scope for initiative as ever there was. The machinery of organization, the improved equipment, and the wider outlook, but add to his responsibilities, on the principle that "unto whomsoever much is given of him shall be much required."

IMPROVED EQUIPMENT.

There is also a great difference in the equipment of the gas manager of to-day and of yesterday. He is not only richer by the accumulated knowledge and experience of the past, but he participates in the discoveries and inventions of a particularly prolific present, a ubiquitous Press assiduously collecting and broadcasting these for his benefit, while a more liberal education and the improved means at his disposal for observation, research, and reference, represent equipment immensely superior to that which his predecessor enjoyed, and furnish an unanswerable reason for "Getting shut o' doin' things rather more or less," and an incentive to still higher achievement. The Technical Association, which represents the oldest and most intimate of the gas manager's interests (for it is still fundamentally true that dividends are earned in the retort house) has no doubt benefited by the organization of the industry, because it has been set free to organize its forces for its own special business—the study of the problems of manufacture and distribution, the advancement of technical education, and co-operation with other organizations for the elucidation of problems common to the engineering and chemical industries.

Within recent years the equipment of the gas manager has been greatly enhanced by the reports of the Special Committees on Gas Investigation, Refractories, Life of Gas Meters, and other vital matters; while the evolution of the Standard Specification marks a further stage in the equipment of the "compleat" gas manager. The extension of the list to include not only refined tar, sulphate of ammonia, refractories, and wrought-iron tubing, but paints, lubricating oils, and a few other things—perhaps even coal—would be welcomed by many a harassed man called upon to decide between the rival claims of accomplished vendors. These might even form the basis of the "Buyers' Circle," which I have no doubt the enterprising officials of the "B.C.G.A." have often thought of, as a complement to the Salesmen's Circle.

Perhaps the most interesting and significant development in this process of standardization is the increasing emphasis being given to thermal efficiency as the standard of comparison in connection with the manufacture and use of the products of our industry; and in view of the fact that this is the chief ground upon which we claim superiority over our rivals—and for good reasons, too—this is as it should be. But the application of this standard has barely advanced beyond the academic

stage, and essential data are still conspicuous by their absence from the published analyses of working results.

The difficulty, of course, lies in the fact that the evaluation of coal, coke, and oil, and also of straight coal and carburetted water gas, where mixed gas is made—all of which are essential—does not, for practical reasons, form part of the routine of any but the larger undertakings. The systematic classification of coal by the Department of Scientific and Industrial Research and associated committees is a useful contribution towards the removal of the difficulty; and the evaluation of coke and breeze has become a necessity, if progress along the lines indicated by a "certain liveliness" in connection with these products is to be pursued.

A further improvement in the equipment of the gas manager was no doubt brought about by the Gas Regulation Act. It not only brought gas legislation into line with modern thought and requirements, but it provided a degree of elasticity which was absent before, and admits of reasonable variation in gas-works practice to suit the varying conditions of time and place.

Gas and Politics.

One of the results of the pursuit of the democratic ideal which has been a feature of Western social evolution has been the increased intrusion of politics into social and industrial life. The gradual extension of the franchise towards manhood suffrage, the evolution of the graduated income-tax, the capital levy—hitherto reserved for application until after we are dead—are all natural expressions of the democratic spirit. We have become familiar with the gradual assumption by State and municipality of responsibility for public services; and the supply of water, gas, and electricity are among the more common forms of activity in this direction. It is also a significant fact that the fantastic scheme unloaded before the Coal Commission a few weeks ago for the nationalization of coal, embracing mining, distribution, and conversion into gas and electricity, represented the considered views of a "shadow government." The scheme of the Electricity Commissioners appears to be a fairly substantial step in this direction; and the Conservative statesmen of to-day who have made themselves responsible for the Bill which is to give it expression are more Radical than the Radicals of fifty years ago. Fifty years hence we shall probably regard the Bolshevik Clydesider of to-day as horribly reactionary and *bourgeois*.

I would not presume to prophesy whether the ultimate end will be Cosmos or Chaos, or even to suggest that, because we have come thus far in pursuit of the democratic ideal without catastrophe, we may continue to pursue it with impunity—that is, perhaps, more a question of pursuers than of pursuit; of people than of system. I only wish to emphasize the fact that we are moving in a certain direction, and the moral for the gas industry is "Be Prepared." We can do this in two ways. The first is by strenuously opposing, as we have been doing through the proper channels, any revolutionary change in the relations between Government and the public services; and if there are to be changes, we want to secure fair play and no favours. The most potent factor in this effort is publicity. "Facts are chiels that winna ding," and even the politician rampant has to respect them—especially if public opinion says so. The second method of preparation is by putting our own house in order, and seeing to it that the efficiency of our manufacturing and distribution systems leaves no room for either Gas Commission or State Department to function, and that the public has no reason to feel that its gas service could be more efficiently or more economically rendered.

This preparedness must not be interpreted in any parochial sense. Indeed, it may be asked whether the development of the industry beyond the bounds set by local conditions has hitherto received the attention which it deserves. A great deal has been done by individual undertakings, ranging from the extension of mains to outlying villages to the amalgamation of large urban undertakings; and we are not without examples of centralization—the most recent, and in some respects notable, being that furnished by the Middle Ward of Lanark, whose scheme, inaugurated in 1920, embraces the acquisition of all the gas undertakings in the Middle Ward of Lanarkshire and the centralizing of the manufacture in one or two stations. Up to date, nine undertakings have been acquired; and the gas is distributed from two manufacturing stations by means of a high-pressure system of 33 miles of mains. We have not been without our visions either, for twenty years ago a scheme was propounded before the Society of Arts for supplying London with gas made at the pit-head in Yorkshire; and more recently, schemes for encircling the countryside with gas mains, with the coalfields as centres, have become familiar features of the Technical Press.

The subject has, however, for the most part, been regarded as one of general interest only; but, in view of recent developments, it would appear to be one of vital importance, and worthy of the serious consideration of gas administrators throughout the country and of the gas industry as a whole, if gas is to retain its place in many of the rural areas.

Gas and the Commonwealth.

Hitherto we have been considering the industry introspectively; but there is an exter-spective point of view as well, and in this also there is a difference between the outlook of to-day and of yesterday. Another of the results of the pursuit of the democratic ideal has been the emergence of the communal spirit which identifies the interests of the rich and the poor, the buyer and the seller, capital and labour. The gas industry, for various reasons, offers a field more favourable to the cultivation of this spirit than many other industries; and gas administrators have not been slow to respond.

The formation of the National Joint Industrial Gas Council, the function of which is "to secure the largest possible measure of joint action between employers and workpeople for the safeguarding and development of the industry for the general improvement and working conditions and for the attainment of improved output with a view to promoting the best interests of all employers and workmen engaged therein," marked a definite stage in the history of the industry. Co-partnership and profit-sharing schemes, the object of which is to reconcile the conflicting interests of capital, labour, and consumer, have become conspicuous features of gas-works policy; while "Service" has become our slogan.

The emancipation of the housewife from the drudgery of the coal fire and cooking range, ministration to the comfort and convenience of mankind from the cradle to the grave—or, more literally, from the incubator to the crematorium—smoke abatement, the conservation of the Nation's most valuable asset, coal; such is the mission of the gas industry. And if it is to be fulfilled, the gas manager must apply the ethical standard with as much zeal as he applies the thermal or the commercial standards when checking results.

PART II.

I have attempted to review some of the changes which have taken place in the affairs of the gas industry during the last 50 years, with special reference to its external relationships and the equipment and outlook of the gas manager. A great deal might also be said about the changes which have taken place in gas-works practice during the same period; but instead of dealing generally with this, I propose to deal with it from the local point of view, and to indicate how the changes referred to are reflected in the practice of the undertaking I have the honour to serve.

Growth.

The growth of the business of the Bristol undertaking is indicated by fig. 1, which shows the quantity of gas sold per annum, and the number of consumers, during the past 50 years.

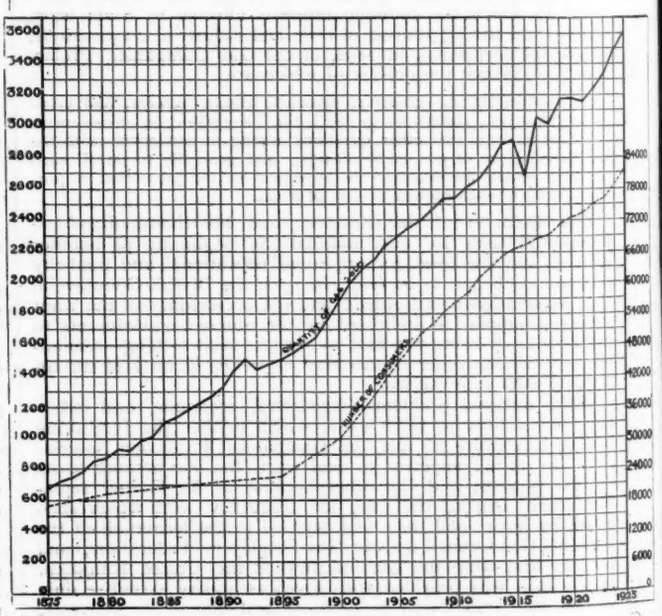


Fig. 1.—Quantity of Gas Sold per Annum and Number of Consumers.

The growth has been fairly steady; and it is interesting to note that the inauguration of the Corporation Electricity Department, in 1893, marked the beginning of a definite acceleration in the rate of growth, both of the quantity of gas sold and of the number of consumers, the average annual increments before and after that date being as follows:

	1875 to 1893.		1893 to 1925.
C.ft. gas sold . . .	42 millions	..	67 millions
Number of consumers .	310		1848

The moral is obvious; and we are not without signs that the prospective developments in the electricity industry have already served as a tonic to the gas industry, and the result will inevitably be a further acceleration in the rate of increase of gas business.

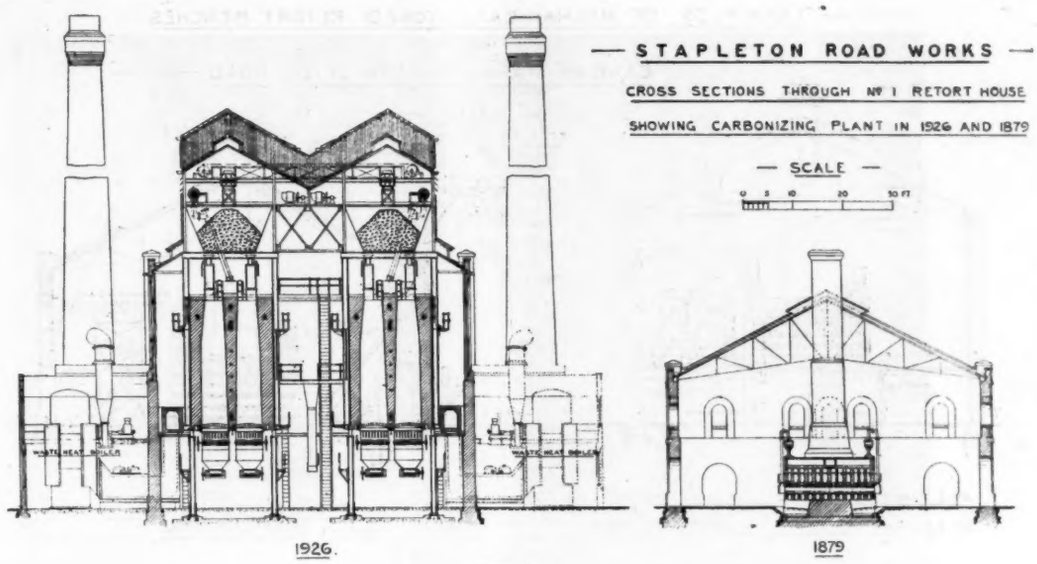

— STAPLETON ROAD WORKS —
CROSS SECTIONS THROUGH Nº 1 RETORT HOUSE
SHOWING CARBONIZING PLANT IN 1926 AND 1879
— SCALE —
0 5 10 20 30 FT
1926.
1879.

FIG. 2.

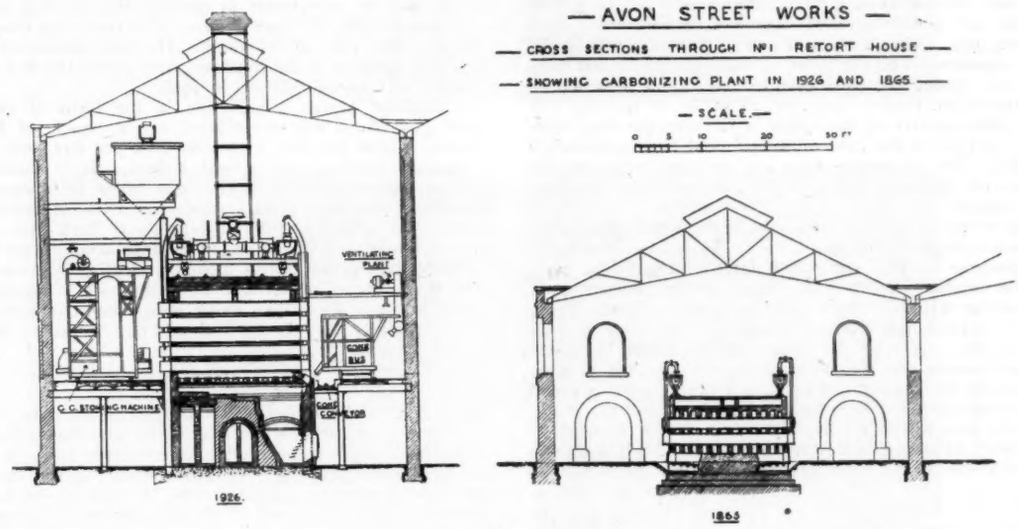

— AVON STREET WORKS —
— CROSS SECTIONS THROUGH Nº1 RETORT HOUSE —
— SHOWING CARBONIZING PLANT IN 1926 AND 1865 —
— SCALE —
0 5 10 20 30 FT
1926.
1865

FIG. 3.

There are three manufacturing stations; and their potential capacities are:

Avon Street	5¼ million c.ft.	or 25,200	therms per day
Canons' Marsh . . .	5¼ ,, ,,	or 25,200	,, ,,
Stapleton Road . . .	7½ ,, ,,	or 36,000	,, ,,
Total	18 ,, ,,	or 86,400	,, ,,

We have become so accustomed to the growth of business in the industry that we take it as a matter of course, and, for the most part, try to keep pace with the increasing demand by extending existing plant or substituting something more efficient. A moderate rate of increase such as ours favours this line of development, because the process of substitution may then be carried out in the ordinary course of renewal. Occasionally, it becomes necessary to build new works, and the gas engineer has then the opportunity of giving expression to his ideas of what a gas-works should be like. My predecessor in this chair had this experience; and it is seldom that such an opportunity as he had leads to results of which the engineer has so much reason to be proud, or the contemplation of which provides the visitor with so many examples of "How to do it." The last new works in Bristol were laid out in 1879, and the last new retort bench was built about ten years later; so that the works and plant to-day present a marked contrast to those we were privileged to see at Bournemouth last year, and their histories furnish some interesting examples of evolutionary progress in gas-works practice—and not a few anachronisms.

CARBONIZATION.

Fig. 2 gives one example of evolutionary progress in the retort house, which has made it possible for 320 tons of coal per day to be carbonized where only 60 tons were carbonized 47 years ago in settings of five retorts, with four furnaces in each setting. The present vertical retort installation, which followed a succession of improving horizontals, was erected in 1913, and reconstructed last year. It consists of two benches arranged in parallel, each bench consisting of eight settings of four retorts, having a capacity of five tons per retort per day when making straight coal gas. The retorts are built with silica material to within 5 ft. of the top; and one of the benches is equipped with a waste-heat boiler, while provision is made on the other for similar equipment at a future date.

The vertical retort is, in many respects, an ideal carbonizing plant; and provided the coals are suitable and uniform in character, a very high degree of efficiency can be obtained. Our experience, however, has not been altogether favourable, because the local coals are probably the most unsuitable in the country. Their swelling properties interfere with free travel through the retort; and this is probably aggravated by the segregation of the dust—which is readily produced in handling—while the density of the coke renders steaming difficult. Admixture of more suitable coal does not improve matters much, and even accentuates the difficulties of steaming control. Under these conditions, we find that the steaming of verticals, from both the thermal and the economic points of view, is at a disadvantage compared with the two-stage system in which water gas is made in a separate plant. Under more favourable conditions, of course, the thermal advantage is with the single-stage system; but even then it does not always follow that the economic advantage is also with it. Capital, maintenance, and working costs, net cost of the coal, stand-by charges, and last, but not least, convenience in control—which has a definite financial equivalent—are all factors in the problem liable to vary according to time and place; and each case must, therefore, be judged on its own merits.

Fig. 3 shows another example of evolutionary progress, where the tendency to follow the alleged example of mankind in passing from the horizontal to the vertical position ceased at 32°, when inclines were installed, and thereafter reverted to the horizontal again. Prior to the last-mentioned change, the relative merits of various systems—including horizontal,

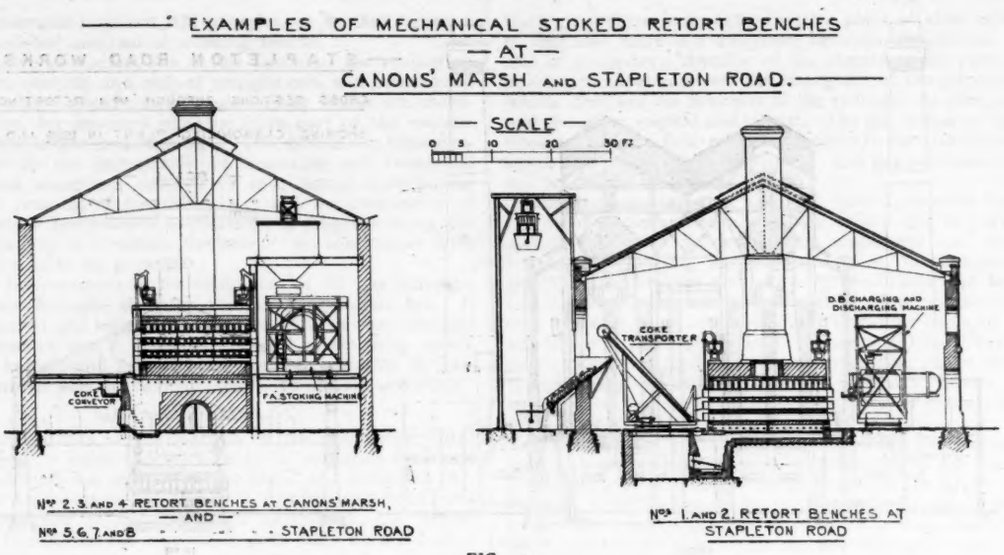

EXAMPLES OF MECHANICAL STOKED RETORT BENCHES
— AT —
CANONS' MARSH AND STAPLETON ROAD.
— SCALE —
0 5 10 20 30 Ft
COKE CONVEYOR
F.A. STOKING MACHINE
COKE TRANSPORTER
D.B. CHARGING AND DISCHARGING MACHINE
Nos 2, 3 AND 4 RETORT BENCHES AT CANONS' MARSH,
— AND —
Nos 5, 6, 7 AND 8 " " " STAPLETON ROAD
Nos 1 AND 2. RETORT BENCHES AT STAPLETON ROAD

FIG. 4.

inclined, and vertical retorts and chambers—were fully considered, and the possibilities of complete carbonization were also investigated. The horizontal retort was adopted chiefly because it appeared to be the most suitable for the mixed coals which it was considered desirable to use; and a bench of nine settings of ten retorts 24 in. by 18 in. by 20 ft. long was installed. The capacity of the bench is 126 tons per day, compared with 45 tons in the case of the original horizontal bench built in 1865. The ascension pipes are provided with anti-dip valves; and the hydraulic mains drain into tar towers at each end of the bench.

A feature which is perhaps unusual is the ventilating plant on the discharging side of the bench. This was considered desirable because of the somewhat narrow stage floor, and also because another retort house adjoins. It consists of a motor-driven fan with distributing main along the bench front, with swivel outlets opposite each setting. The bench was erected in 1923; and when another inclined retort bench in No. 3 house became due for resetting, it was decided to substitute a similar horizontal bench, except that Congdon pipes were substituted for the ordinary ascension pipes, and the shape of the retorts was modified; the sill being curved instead of flat with a view to strengthening the section, which had shown signs of weakness at the sides. This bench is now in course of erection.

Fig. 4 gives two further examples of the evolutionary process at intermediate stages, in each of which the settings consist of nine 20 in. by 15 in. retorts. Two of the benches at Canons' Marsh are equipped with Fiddes-Aldridge stoking machines; and it may be mentioned in passing that it was one of my predecessors (Mr. William Fiddes) who furnished this machine with the first part of its name. He was associated with the early development of the machine, and one of the first built was installed at Canons' Marsh, in 1906.

At Canons' Marsh a variation in the form of carburetted water gas plant was substituted for a bench of horizontal retorts. There are two 1,000,000 c.ft. per day sets, and one is equipped with a waste-heat boiler. It is customary to refer to the carburetted water gas plant in somewhat disparaging terms as a good stand-by or a useful means of disposing of surplus coke; but I venture to think that, if all the factors enumerated above are taken into account, its economic efficiency may prove by no means a negligible quantity. Its effect upon the coke market deserves more recognition than it receives; and I certainly think that, when comparing economic efficiencies, the coke used should be charged at the lowest price obtainable.

COKE.

According to the Board of Trade returns for 1924, the quantity of coke used for carburetted water gas was 976,366 tons, or about 10 p.ct. of the total coke available for sale. If the equivalent coal gas had been substituted for the carburetted water gas, a further 1,500,000 tons of coke would have been produced, making a total of about 2,500,000 additional tons available for sale; and the effects of placing this additional quantity on the market may be imagined. In Bristol alone, out of a total of 98,452 tons of coke available for sale in the

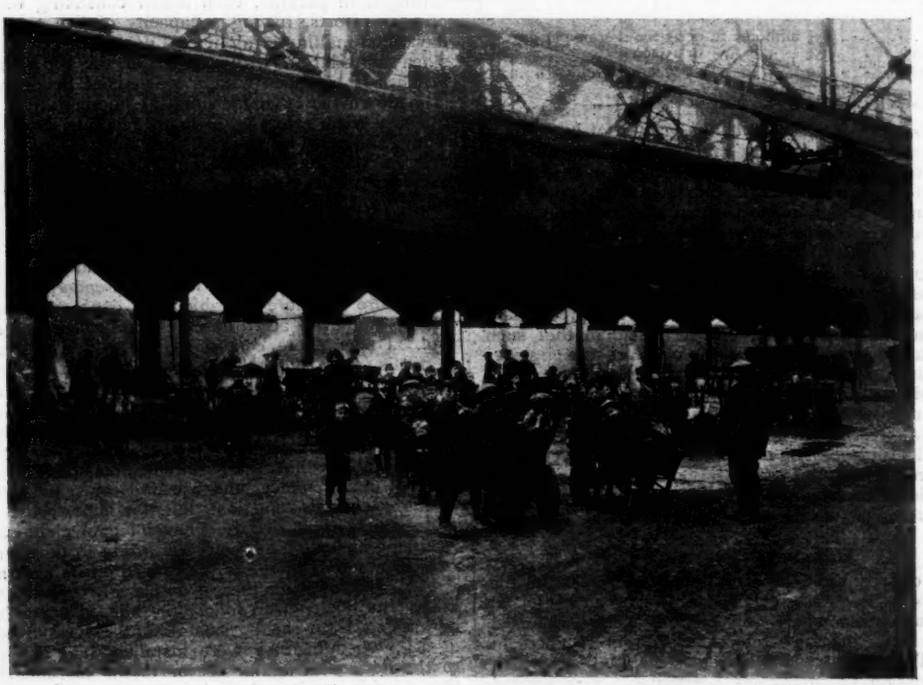


FIG. 5.—SMALL COKE CUSTOMERS—AVON STREET.

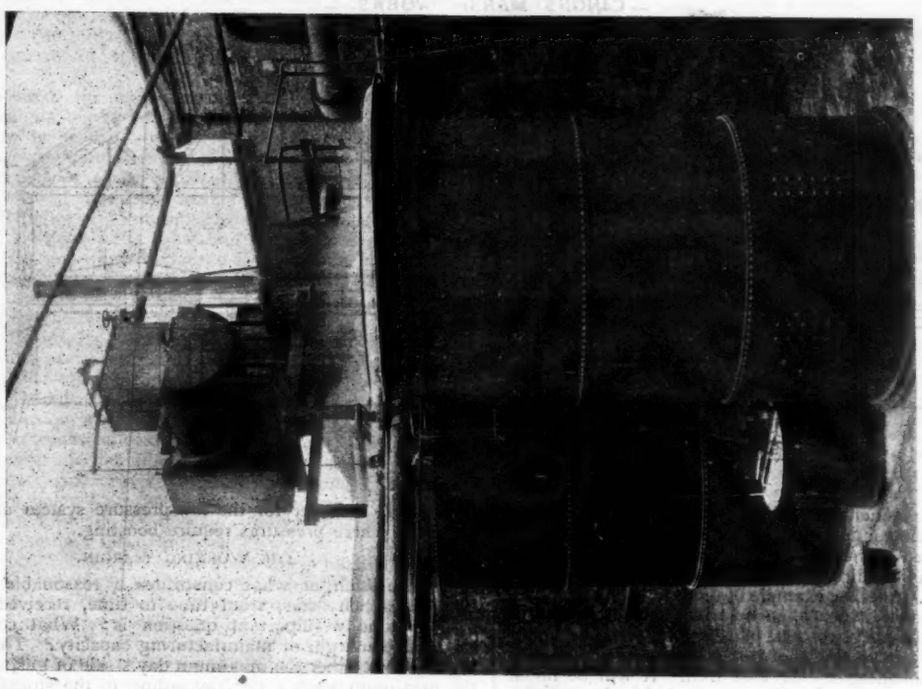


FIG. 8.—WATER SOFTENING PLANT.

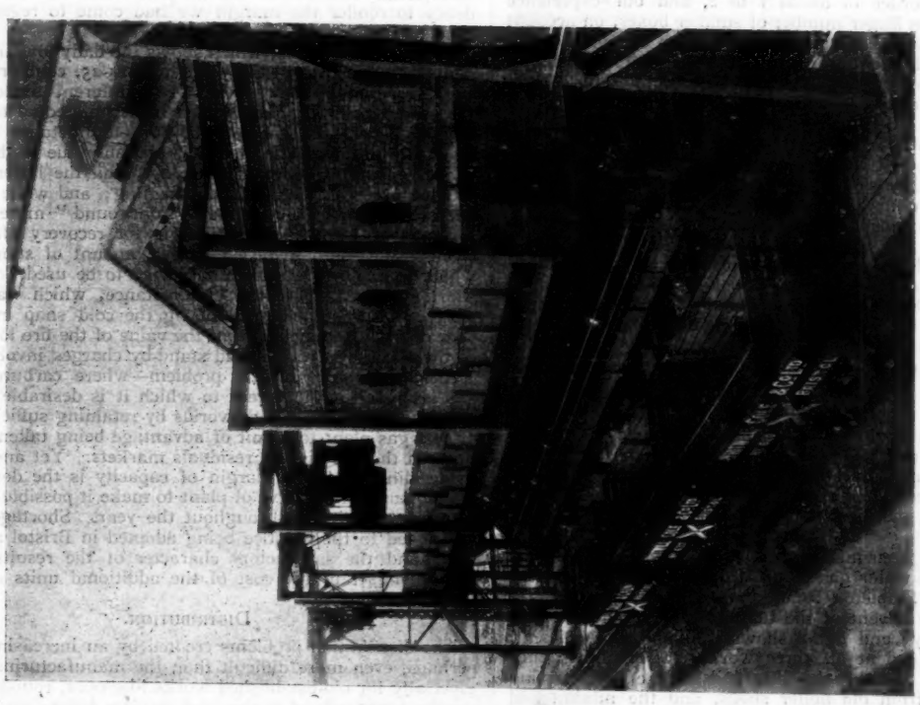


FIG. 6.—COKE SCREENS—STAPLETON ROAD.

same year, 18,799 tons were used for carburetted water gas; and by the same process of reasoning, the substitution of coal gas for carburetted water gas would have resulted in 48,000 additional tons of coke being available for sale. However much the advent of this coke might have been welcomed in neighbouring counties, where its superior quality is well known, I am afraid the local gas undertakings would have viewed it with dismay.

The local demand is not very favourable to grading; and the results of tentative experiments in this direction have not been encouraging. Special efforts are made to promote local sales; and the fact that last year 62,000 tons, or 80 p.ct. of the total coke sold, was disposed of in Bristol, speaks for itself. It may be of interest to mention that of this amount nearly 10,000 tons were sold direct to small customers for domestic use in ½ cwt. and 1 cwt. lots. A group of typical small customers is shown in fig. 5. The hoppers in the background are used for cart sales; the coke being screened as it falls into the hoppers from the conveyors overhead. Fig. 6 shows recently erected hoppers and screens for rail or road truck sales. The screens are of the cascade type, and prove very efficient and expeditious; the loading of three 10-ton trucks being accomplished in 20 minutes.

For the transport of coke, the D.B. type of conveyor has been, for the most part, adopted. The G.B. type is also employed; and in one of the examples shown in fig. 4 a transporter and telpher combination is used.

PURIFICATION.

The condensing and ammonia recovery plants include a variety of well-known types, ranging from early Victorian atmospheric condensers and tower scrubbers to Georgian water-cooled condensers and rotary washers substituted or added from time to time, as the need arose.

The purifiers, which sixteen years ago were all water-sealed and equipped with centre valves for working on the "three-in-and-one-out" principle, have, in the interval, been all converted to dry seal or reconstructed, except in the case of four sets which are now out of action. Fig. 7 shows an example of purifier reconstruction recently carried out, in which two sets of four boxes 25 ft. by 23 ft. by 6 ft. were substituted for two sets of four boxes 18 ft. by 18 ft. by 3 ft. 6 in. The new boxes

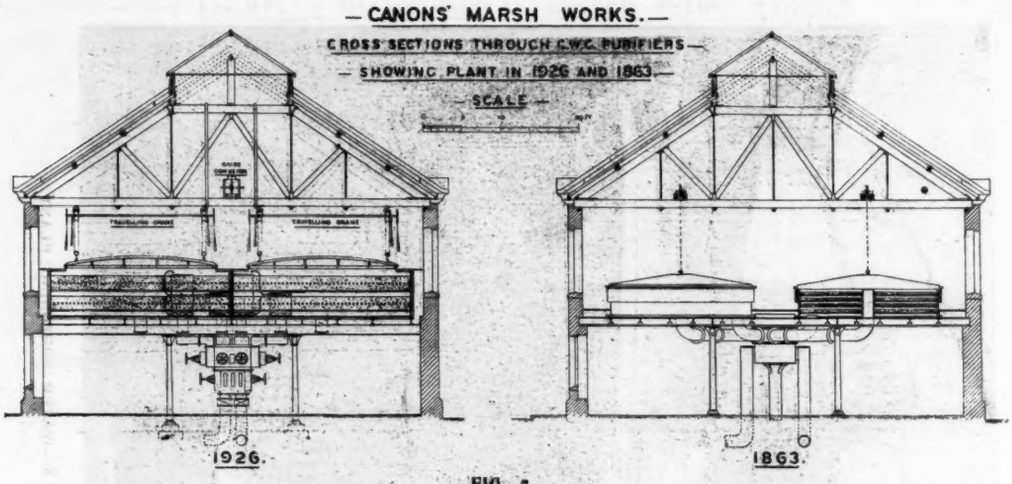


FIG. 7.

are divided into two sections vertically, and provided with adaptable inlet and outlet connections, which admit of the two sections being worked either in parallel or in series; while the flow of gas can be directed either upwards or downwards by means of valves. Another example of reconstruction is of two sets of four ferro-concrete boxes, each 42 ft. 4 in. by 32 ft. 3 in. by 6 ft., substituted for two sets of four water-sealed boxes 30 ft. by 20 ft. by 5 ft. during the war, when this form of construction offered advantages over cast iron. It will be noted that in the two reconstruction jobs described the sizes of the boxes are in the order of about 1 to 2, and our experience leads us to favour a larger number of smaller boxes, on account of the less disturbance liable to be caused when changing oxide, both by reason of the fewer men required and the smaller reduction in effective plant during the operation. This is emphasized when no catch-box is used.

In common with other undertakings, Bristol has suffered from naphthalene deposition; and during the last twenty years many "cures" have been tried, ranging from the addition of oil vapour to the gas by steaming or atomizing, to washing the gas with solvent oil. At present, the whole of the gas at Canons' Marsh is washed with gas oil; while oil vapour is added at the other two works. A prolific cause of naphthalene deposition is, no doubt, the presence of water in the distribution system; and so long as there is risk of this occurring, the only sure remedy appears to be the total elimination of naphthalene at the works. I understand that the problem is being tackled from another direction; attempts being made on a working scale to dry the gas as it leaves the works. Needless to say, the results are awaited with great interest.

Steam Plant.

The exhaust houses furnish a number of examples of modern exhausters substituted for exhausters of older types; and the whole of the steam generating plant has been reconstructed within the last fifteen years, the Lancashire type of boiler being the one favoured, because of its greater reserve of water capacity.

Departures have been made in the case of waste-heat boilers on the carburetted water gas plant at Canons' Marsh and the vertical retorts at Stapleton Road, both of these being of the tubular type. The advent of the tubular boiler renders water-softening necessary; and fig. 8 shows a simple, but efficient, type of plant adopted at all three works. It combines once more the new and the old; the filter and storage tanks having been constructed from old boiler shells, and the mixing and measuring apparatus installed on a platform arranged at the top. At two of the works, exhaust steam is used for heating the feed water; while at the other, the hot water from the condensers is used direct.

Gasholders.

The gasholders are fifteen in number, and include several district holders, the capacity being 16,000,000 c.ft., or about equal to the maximum day's sale. They were all erected, however, at a time when the statutory minimum pressure was only 8-tenths in.; and within recent years the effective capacity during the daytime has been reduced to about one-third of the nominal, because the pressure produced by any but the fully inflated larger holders is inadequate.

Gas-engine driven boosters, installed about thirty years ago for the purpose of transferring gas from one works to the other and to the district holders, were brought into use for boosting pressures on the district. Within the last few years, these have been replaced by two sets of steam-driven turbo-blowers—one set for boosting district pressures up to 12 in., and the other for inter-station work at pressures up to 30 in. By means of the first, it is now possible to utilize the storage capacity to the utmost; while the inter-station high-pressure system can be used as a feeder for the low-pressure system at a number of points where pressures require boosting.

The Working Margin.

The question of what constitutes a reasonable margin of storage capacity has, from time to time, received attention; but an equally important question is: What constitutes a reasonable margin of manufacturing capacity? The determining factor is either the maximum day's sale of gas, or, at most, the maximum week's sale, according to the storage capacity; and certain features of the modern winter load show a tendency to render the margin we had come to regard as sufficient no longer so.

A chart [not given], which shows the daily load in November and December during the years 1923-24-25, compared with the same in 1898-99-1900, reveals two different tendencies—viz., the tendency of the Sunday load to become equal to the week-day load, and the tendency of both to fluctuate much more from day to day. The former is probably due to the increased use of gas for cooking on Sundays, and the latter to the increased used of the gas fire for heating; and while the former operates to make the Sunday "run round" more difficult to arrange, and provides less margin for recovery after a heavy week's sale, both involve a larger amount of stand-by plant, which is liable to remain unused, or to be used only for very short periods. The latter circumstance, which was very forcibly brought home to us during the cold snap in December last, detracts somewhat from the value of the fire load, because of the additional capital and stand-by charges involved.

Another feature of the problem—where carburetted water gas is made—is the extent to which it is desirable to attempt to make the most of both worlds by retaining sufficient reserve of coal gas plant to admit of advantage being taken of fluctuations in the gas oil and residuals markets. Yet another factor in deciding upon the margin of capacity is the desirability of having sufficient reserve of plant to make it possible to continue resetting operations throughout the year. Shortage of skilled labour led to the practice being adopted in Bristol a few years ago; and the satisfactory character of the results is a substantial offset to the cost of the additional units of plant required.

Distribution.

The distribution problems created by an increasing load are, perhaps, even more difficult than the manufacturing problems, especially for old-established works like ours, round which had grown a network of mains and services before the present extension of the city and suburban boundaries or the intensive use of gas we are familiar with to-day was dreamt of, and when 8-tenths in. was the minimum pressure. [A chart was included showing the rate at which the mileage of mains and the gas sold per mile increased between 1875 and 1925. Miles of mains grew from about 177 to 420; the rate of increase being greatest from 1895 to 1905 and from 1920 to 1925. Gas sold per mile of main rose (a fairly regular curve) from about 3·85 millions in 1875 to 8·8 millions in 1925.] To-day we have three main distribution problems:

(1) The determination of what is an adequate minimum pressure.
(2) How to maintain that pressure.
(3) How to equalize the pressure over a wide area of supply.

The Gas Regulation Act gives 2 in. as the minimum pressure in the mains; but we know from experience that in many cases twice that amount would not suffice to ensure adequate pressure what time operations in the kitchen and the bath-room coincide and the home fires are all burning—especially if the consumer's piping belongs to the 8-tenths period. The best pressure in these circumstances is rather difficult to deter-

mine; but 2 in. at the outlet of the consumer's meter appears to be the irreducible minimum, and the corresponding pressure in the mains can only be determined by the systematic and continuous survey of the district by means of pressure recorders.

The problem of the maintenance of the minimum pressure has been happily solved by the mechanical booster; but the question may be asked whether in the design of future gasholders more attention should not be given to the possibilities of a heavier holder as an alternative. The first cost is undoubtedly heavier; but considerable saving would be effected in the maintenance and running costs of the boosters.

The third problem is the equalizing of pressures. Difference in altitude, distance from the source of supply, variations in the demand between one district and another, between one consumer and another, and between one hour and another, are all disturbing factors; and the ideal solution would appear to be a simple, efficient, and inexpensive governor which could be incorporated in every consumer's meter. But this has yet to be invented, and other means have to be used.

Within a limited area it is essential to maintain the capacity of the distribution system. Over a wide area there are, of course, the alternative solutions provided by district holders and high-pressure feeder mains. The former system has much to commend it; and provided the capacity, weight, and distribution of the holders are adequate, nothing could be simpler, but first cost, difficulty of finding suitable sites, and lack of elasticity are serious disadvantages.

It was adopted in Bristol some years ago; but within recent times it has been found necessary to augment the system by utilizing the inter-station high-pressure system to feed the low-pressure mains at various points. In addition to this, a relay high-pressure plant has recently been installed at the Bedminster district holder station for the dual purpose of augmenting the low-pressure system and supplying direct to two outlying districts, 2 and 4 miles distant respectively. The boosters in the latter case are capable of working up to 5 lbs. per sq. in. pressure, and covered steel mains with welded joints have been used. Where practicable, gas is supplied through district governors to local low-pressure mains; but in other cases it is supplied direct to the consumer through individual governors.

Fig. 9 shows the general arrangement of the distribution system; and the following particulars may be of interest:

Length of low pressure mains	404 miles
,, inter-station H.P. mains	10 ,,
,, district steel H.P. mains	6 ,,
Number of ordinary meter consumers	44,086
,, slot ,, ,,	37,464
,, cookers on hire	71,103

THE FUTURE.

Having completed a somewhat cursory survey of the works and districts, we may ask: In what direction are we to look for developments and improvements in the future? With regard to what is, after all, our chief business—viz., gas making—I cannot do better than refer to Part II. of the Clerk-Smithells-Cobb report on the "Coal, Gas, and Electrical Supply Industries of the United Kingdom," issued in 1919, and venture to think that its re-issue at the present moment would be most opportune. The review presented there of the development and position of the gas industry is still up-to-date; and the main conclusion from the point of view we are now considering is summed up in the following paragraph:

> It cannot be doubted that great relative reductions can still be made in the rates at which heat units are sold to the public by following the broad lines indicated; and perhaps the most important item among numerous others will be found in delivering the maximum possible proportion of the total heat in the coal carbonized (in the form of gas) into the station gasholders.

We have yet a long way to go before we get the perfect complete gasification plant with internal heating rendered possible by a supply of cheap oxygen. But it is possible that a still higher efficiency may be attained in the production of straight coal gas; and the files of the Patent Office bear eloquent testimony to the efforts that are being made to improve the efficiency of the straight water gas plant, and to the still more numerous efforts to combine the two processes. Meanwhile, the attention that is being given to the quality of coke and to the education of the public in the use of it seems to point to still further developments in this direction. The cleaning and grading, and the limitation of moisture in the coke, are all phases of this development; while the study of its physical properties and the influence on these of coal blending and different methods of production, may have far-reaching effects on gas-works practice in the future.

The utilization of waste heat represents another direction in which still further economies can be effected; but the difficulty is to utilize it. This was brought forcibly home to us a short time ago, when considering the possibilities of utilizing the waste heat in exhaust steam; and it was found that only a small proportion of the total heat available could be usefully applied. This raises the question whether the established practice of using non-condensing engines and turbines does not require revision; and the fact that the inability to use all the waste heat applies to waste gas as well, once more draws attention to the possibilities of the gas-works as an eminently suitable centre for the economical production and distribution of electricity.

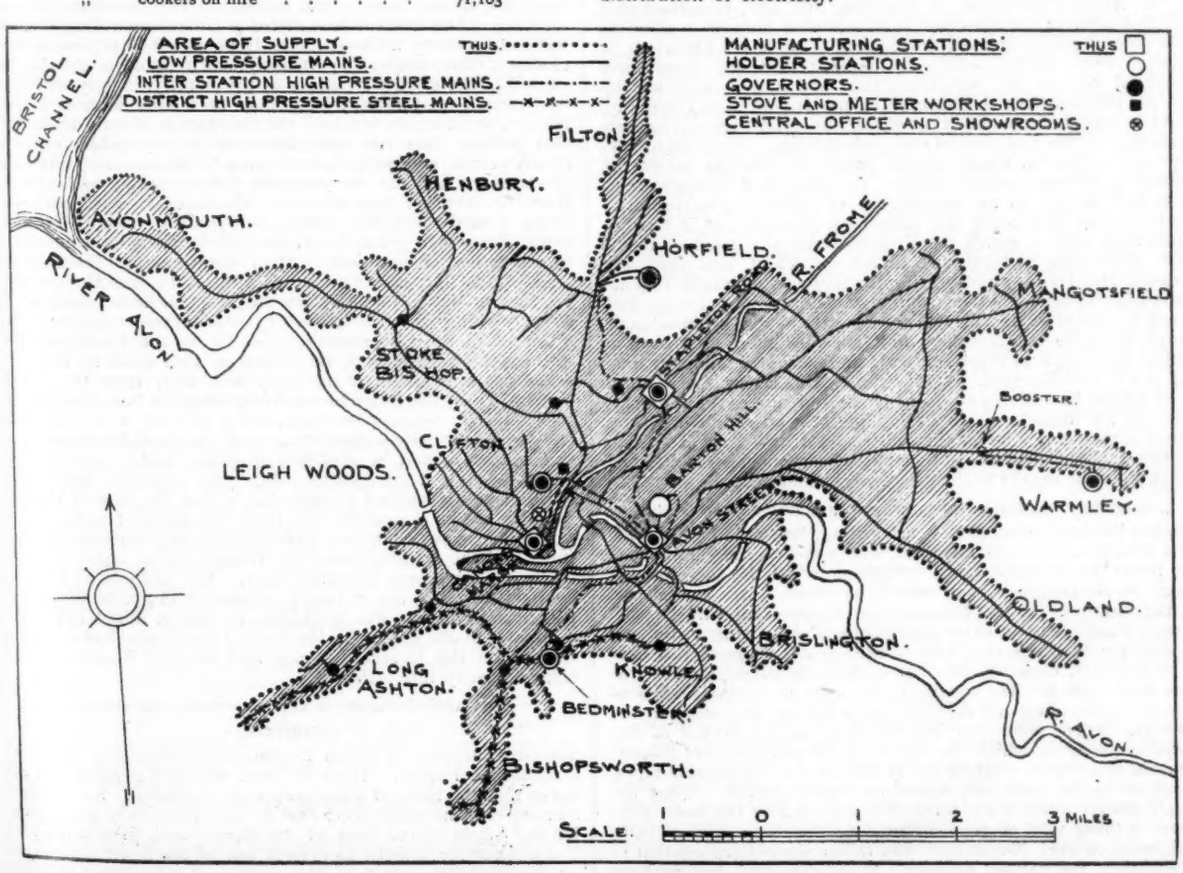


FIG. 9.—GENERAL PLAN OF DISTRIBUTION SYSTEM.

Liquid purification is another matter which is no doubt destined to take a larger place in gas-works practice than it does at present; but there does not appear to be much prospect of displacing existing plant, because the present cost of purification is so small. In our case it is only about 1 p.ct. of the total cost of manufacture.

Yet another direction in which great improvements could be effected lies more or less outside the industry. The chronic state of unrest in the coal and transport industries imposes, not only upon the gas industry, but upon the community, a heavy financial burden in the shape of capital outlay on huge stocks of coal piled-up against emergencies, and the cost of interest and depreciation must be very great, for every additional average week's requirements for the industry represent about 350,000 tons of coal. Is it too much to hope that the future holds in store for us a Labour-Capital truce, under which this heavy insurance premium can be avoided?

The quality of the coal, and the discriminate use of it, are also matters which concern the public as well as the gas industry. One witness before the Coal Commission (Dr. Lessing) estimated that the extra cost of transporting the inert matter now being distributed with the coal amounted to £4,500,000 per annum, while the further consequential losses from lowering the combustion and carbonizing efficiencies were estimated at from £10,000,000 to £20,000,000 per annum.

Once more, is it too much to hope that some time, somehow, the spirit which sets country before class or self will secure for these vital matters the sane and practical considerations which they deserve, and thus make it possible for coal, the chief source of the Nation's prosperity in the past, to contribute to the recovery and continuation of that prosperity now, instead of degenerating into an object for the Nation's charity?

Acknowledgments.

The President, before resuming his seat, said he would like to take the opportunity of acknowledging the debt he owed to his old Chief, Mr. Irving (whom he was pleased to see with them that day), for the amount of work done by him upon which he (the President) had drawn in the preparation of his address. If there were points in the address to which any members would like to refer, the meeting would be only too glad to hear them.

Mr. C. F. Botley said he would like to propose that a very hearty vote of thanks be accorded the President for the most valuable address he had given them. He was sure they had all listened to it with the greatest possible interest; and they were greatly indebted to him for the many illuminating points which it contained. A closer study of the address would prove of advantage to every one of them.

Sir Arthur Duckham, in seconding the vote, remarked that in this address the President had presented himself to them as an able engineer and administrator. Any of his Directors or people from Bristol who were present that day must have realized that in Mr. Robertson they had a man very worthy to fill the position of Engineer to the Bristol Gas Company, and a man fully qualified to advise the Board on all matters relating to the interests of the undertaking. More than this, by the manner in which he had placed his address before the meeting, he was certain that the President had endeared himself still further to the members. An address of so technical a nature as this could not have been presented in a happier way than that in which the President had put it before them. Mr. Robertson had referred to his old Chief, and their old friend, Mr. Irving; and he (Sir Arthur) was delighted that he was able to be with them that day, because Mr. Irving had been a very close and helpful friend of his own, in those early days when he (the speaker) first became aware that such a thing as a vertical retort existed, and was struggling against all sorts of difficulties. At that time, Mr. Irving's assistance and advice had been extremely helpful to him. While appreciating the importance of getting the best possible work from their carbonizing plants, they all realized how hard it was to obtain really comparable statements of carbonizing results, and to apply these results to their own works and needs.

Efficient Blending of Coal and Treatment of Coke.

Before leaving the subject of carbonizing, he would like to draw the attention of those members who were specially interested in retort house working to something which he had recently seen in Birmingham, and which he trusted Mr. Foster (the Chief Engineer to the Birmingham Corporation Gas Department) would take an early opportunity of imparting to the gas industry. In connection with a large retort house of just over 7 million c.ft. capacity, Mr. Foster had introduced—and it was the first time he (the speaker) had seen it—a really efficient means of blending his different coals before they went to the retorts. There were four big hoppers, having a total of five days' capacity, in which the various kinds of coals were placed; and the coals were worked-out by means of a regulatable screw feed on to the conveyor, where they were mixed. Thus the coals always went to the retort house in exactly the same mixture—a thing vital to good carbonizing, whatever form of plant might be in use. Great care was taken against segregation of the coal in the various hoppers. What, however, had perhaps interested him more than anything else was Mr. Foster's method of dealing with coke. He took the coke from the vertical retort plant, and first of all screened the dust out. Then the whole of the coke under $\frac{7}{16}$ in. was sold at a very fair price to the electricity works, to be used with coal slack. This gave a very fine efficiency in the generation of electricity, and was an example of how gas people could help the sister industry. Then Mr. Foster took the coke between $1\frac{1}{4}$ in. and $\frac{7}{16}$ in., and put it in his producers for firing his retort installation; and nothing else was going to be used for this purpose. This left him only coke over $1\frac{1}{4}$ in. for handling. All the smaller stuff had been got rid of, and he had the larger sized coke to sell. He trusted Mr. Foster would see his way to making public these retort house advancements, which appeared to him (the speaker) to be extraordinarily good. The President had had experience with vertical retorts—and he had told them not an altogether favourable story. He (Sir Arthur) had seen him several times on matters of this kind, and believed he had possibly the worst coal in the country for vertical retorts, and he had certainly very peculiar conditions. But he (the speaker) had heard that the people who were interested in vertical retort manufacture were beginning to understand a little about these retorts, and might have progressed even so far as to meet the very onerous conditions alluded to. This, of course, was only a rumour. [Laughter.]

Liquid Purification.

A matter of much interest to the gas industry which had been referred to by the President was liquid purification. A great many engineers had been making experiments in this direction; and the industry would certainly like to know what were the possibilities of liquid purification. Well, he himself had been closely interested in it; and he felt that possibly it might be advantageous to such undertakings as the Gas Light and Coke Company and Birmingham, and some of the larger towns where space was of the utmost importance. But he could not see that liquid purification was going to save much in cost, though it might save in trouble of process and very considerably in ground space.

A Socialistic Bill.

Matters which were just now uppermost in the minds of all of them were the Coal Commission Report and the Government Electricity Bill. On perusal of the Electricity Bill as drafted, it appeared to be appalling. He did not know what those present in that room would have felt if, instead of "electricity," the word "gas" had been written throughout that Bill. They would, he believed, all have felt very unhappy; and he thought this was the feeling of their friends in the electrical industry. Here was a Bill introduced by a Conservative Government, which was by far the most socialistic piece of legislation that had ever been proposed in this country. It was a Bill bringing Government interference into industry. The Government were creating a Department (not styled a Government Department, but controlled by a Government Department, and therefore in reality a Government Department) which would undertake the control of the electricity supply of the country—a duty which he was certain no person living would personally wish to undertake; a duty which involved the conception of an administration greater than the administration of any public body or of any private enterprise now existing in this country. And the Government had put forward this scheme purely and entirely from the electrical point of view. This colossal experiment was being foisted upon the country for political reasons—because every Party had tried to create an electricity scheme—by a Conservative Government. If a Conservative Government would go so far, how far would the next Labour Government go, having this example before them? It behoved them all to do everything in their power to make these considerations apparent to the Government. So far as the Electricity Bill affected the gas industry, he might say that when he was first asked his opinion on it his reply was that, from the selfish point of view, the Bill was the finest thing he had seen for the gas industry, because he was certain that by it for the next few years electricity undertakings and electrical development in this country would be stultified in many ways. He did not think that by it competition with gas would be made any greater; and it seemed to him that it was the duty of the gas industry not to regard the Bill from this point of view. They would like to see electricity undertakings as prosperous as possible, and the country benefiting from a cheap supply of electricity for its proper economic uses. The attitude of the gas industry should be one of helpful endeavour to get an Electricity Bill in a form that was workable, so that it might not prove a disaster to the country. He advised those who had not read the present Bill to secure a copy and study it, because it was extraordinarily interesting.

The Coal Commission Report.—Fuel and Power Committee.

The other matter to which he desired to refer was the Coal Commission Report. Those of them who had perused it must agree that the body of the report was wonderful. Sir Herbert Samuel—and he understood that he was practically responsible for the whole of the body of the report—and those with him had worked for months to present one of the finest statements on the coal industry that had ever been submitted; and for this they deserved thanks and appreciation. But here, again,

they were met by the great danger of Government interference with industry; and they must all feel, too, that the report had not furnished the Government with sufficient recommendations to enable them to solve the difficulties at present existing. He believed, in fact, the Government were searching for suggestions to put before the two sides to this terrible dispute which might prove acceptable to them and good for the country. There was one point in the report to which the Government were giving special attention, and that was the Fuel and Power Committee. For some seven or eight years past, he (Sir Arthur) had talked of a Fuel and Power Committee as being necessary to this country. He did not believe, if a Committee of this kind had been in existence, and if the gas industry had been represented upon it, that the Electricity Bill would have been brought into being as it stood to-day, because advice would have been taken. But, of course, there had been opposition to the idea, because the leaders of the gas industry—and very properly so—had been frightened of a Gas Commissioner, under the control of whom he was certain they all hoped they might never be, as their brothers of the electrical industry were under the control of the Electricity Commissioners. On the other hand, however, a Fuel and Power Committee should be of great advantage to the country and to the various industries interested in fuel and power. He asked that their own Association and kindred bodies of the gas industry should formulate their ideas as to what would be the best organization of a Fuel and Power Committee for the good of the country, and incidentally for the benefit of the gas industry. He thought it was a thing that was coming, and that it was possibly, so far as they were concerned, one of the most important parts of the Coal Report.

A PROSPEROUS COAL INDUSTRY NEEDED.

Still on the subject of the report, what they all wanted to see was a prosperous coal industry, which was the foundation of wealth in this country; and from experience they must realize that the only basis for a prosperous coal industry was the economical production and distribution of coal—especially the economical production. One part of the report which seemed to him to be not so good as it should be, was the suggestion of a reduction in wages for the miner. To-day one could not feel that the miner was getting too much money. On the other hand, one would have liked to see in the report some suggestion of a greater production per head. Those of them who dealt with coal and collieries realized that there were collieries which could not be kept alive, and that it was uneconomical to try to keep them alive; and undoubtedly the question would have to be faced of these collieries going out of production, with a consequent possible increase in unemployment until the men could be taken on at better-paying collieries or in other spheres of labour. But they wanted to see the coal industry prosperous; they wanted to see it co-operating with them in the provision of suitable fuel for their purposes. With a Fuel and Power Committee in existence, they could properly put forward their needs; and he felt certain that this would prove beneficial. He had taken up a good deal of the time of the meeting, but it was because he believed the matters to which he had been referring were vital to them all. The gas industry was more alive to-day than ever before. The level of technical knowledge and administration was higher than it had ever been. The gas industry was a prosperous industry, which did not need assistance from the Government. As a matter of fact, bearing in mind the Electricity Bill, they felt that they did not want to ask for what the electrical people had got—and did not wish for. But the gas industry would like an opportunity of participating in assisting the fuel industries of the country. The Southern Association had in the past been exceedingly happy in their Presidents; and it appeared as though they were to be happy in the future. Everybody was willing to help everybody else, and to work for the good of the industry. It had been a great treat to listen to the President's address.

Mr. DANIEL IRVING said he would like to give expression to the gratification and pride which he had felt at hearing so excellent a Presidential Address. It was a great satisfaction to him to recall the fact that it had fallen to his lot to introduce Mr. Robertson to the gas industry. ["Hear, hear."] That introduction was followed by Mr. Robertson becoming his assistant, and subsequently his successor at Bristol. It was true that the address might not contain quite so many of those pleasing and humorous sallies as they were accustomed to receive from him; but it was particularly characteristic of the President in its physical aspect. In his survey of the general position and his review of the work and progress of the Company which he so well represented, there were many useful points that would well repay careful consideration. He hoped, and felt he had every justification for expecting, that Mr. Robertson's year of office would be successful in every respect. It was a great pleasure to him to support the vote of thanks to their President.

Mr. MOON put the vote to the meeting, and it was carried by acclamation.

Mr. J. TERRACE said the President had kindly suggested that the part of the address which referred to his works should be open for discussion; and it was to be hoped that members would take advantage of this offer. Personally he had been particularly interested in the picture, which he thought was familiar to them all, of the relationship existing between gasholder capacity and the requirements of the consumers. They reckoned the gasholder capacity in terms of the day's output; but in very many cases the capacity was not the number of cubic feet or therms which the holders would contain, but the number of cubic feet or therms which they would deliver at pressures which were of use to the consumers. Sunday cooking, gas fires, &c., had created loads which made the question of maintaining the supply of gas a very different problem from what it was even five or ten years ago. To realize this, one had only to chart the great variation in the daily output caused by the big demand for cooking on Sunday, or, more disconcerting still, by the very heavy demand resulting from time to time through a number of gas fires and other heating apparatus being suddenly put into use. They were no longer able to trust to the stock in the holders to meet the demand, but the manufacturing plant had to be handled in such a way that at very short notice a greater proportion of it could be brought into use. In the course of his address, the President had said that attempts were being made on a working scale to remove naphthalene by drying the gas before it left the works. Recently his (the speaker's) Company—the South Suburban Gas Company—had been carrying out some interesting experiments in this direction, and they seemed most hopeful. Could the President tell them what was being done elsewhere, and the method it was proposed to adopt?

Mr. J. S. THORMAN remarked that the statement had been made by the President that the local demand was not very favourable to grading coke; but it seemed that nearly 10,000 tons out of 77,000 tons, or about one-eighth, was sold direct to small customers for domestic use. This appeared to him to be quite a large percentage, and to indicate that the demand was suitable for the adoption of grading. It had been a very general experience that the grading of coke was creating a great increase in demand. The President, in another part of his address, had referred to the possibilities of erecting heavier gasholders as an alternative to boosting. There was, in fact, a good deal in the address about boosting; and he was wondering whether the President could give them any idea of the cost per million c.ft. of boosting gas. He (Mr. Thorman) had been seeking this figure in various directions.

The PRESIDENT, in reply, thanked the proposer, seconder, and supporter for their kind remarks, and the members generally for the cordial way in which they had passed the vote. He would be voicing the feelings of everyone present when he said that they appreciated very highly indeed the weighty and pertinent remarks which they had heard from Sir Arthur Duckham on topics which were greatly exercising their minds. Sir Arthur was universally regarded as one of the assets of the gas industry; and it was a privilege to have him with them that day. The words he had spoken deserved to be broadcasted, not only throughout the gas industry, but throughout the whole of the land. With regard to the points that had been raised, he might say that a plant for drying gas for the elimination of naphthalene was about to be put down not very far from Bristol, but not in Bristol itself; and he hoped that at a later date the Association might have the benefit of any information that became available. Mr. Thorman had alluded to an apparent inconsistency in the address—on the subject of the grading of coke. Well, it was one of the peculiarities of those small customers to whom he (the President) had referred that the larger the coke the better they were pleased. It was a prejudice; but in his district it was a strong one. Even though these customers might probably have to break the coke up to get it into their stoves, they attached the utmost importance to getting it large at the works. With regard to the cost of boosting gas, he might say that he had been at considerable pains to get comparative figures for the cost of distribution of both electricity and gas; but the difficulties in obtaining particulars with reference to electricity were extraordinary. He did not think the electricians themselves knew what the cost was. It was, however, a significant fact, in connection with a local scheme, that one-quarter of the cost was being earmarked for distributing cables. As to boosting gas, the conditions varied so much that it was exceedingly difficult to give a figure of cost which would be generally representative. For this reason he would prefer to refrain from quoting any of the figures.

VISIT TO BRISTOL.

We have since the meeting learned from the Hon. Secretary that the visit of the Association to the works of the Bristol Gas Company, by invitation of the Chairman and Directors, will take place on Friday, May 14.

Oxygen in Water Gas Manufacture.—In the February issue of "Fuel in Science and Practice" mention is made of Prof. S. W. Parr's recent investigations in the use of oxygen in water gas manufacture on a fairly large scale. Considerable difficulty was found in burning carbon to carbon monoxide in oxygen, with or without the addition of steam. With a slow stream of oxygen the temperature of the fuel bed could not be maintained. With a rapid stream, the combustion was localized in a small hot zone, giving chiefly carbon dioxide; and the rest of the fuel was not sufficiently hot to reduce this.

SCOTTISH JUNIOR GAS ASSOCIATION (EASTERN DISTRICT).

VISIT TO THE CARNOUSTIE GAS-WORKS.

On Saturday afternoon, March 13, about forty members of the Association visited the Carnoustie Gas-Works, where they were met by Mr. J. Ireland (Engineer and Manager), who, along with his assistants, Messrs. Inglis and Small, conducted them over the works. Following the inspection, the visitors were entertained at tea, on the invitation of the Carnoustie Town Council Gas Department.

Councillor Duncan (Convener) welcomed the members, expressing himself as delighted at having such a large number present.

Mr. A. McG. Clark (President) thanked the Carnoustie Gas Department for the privilege of inspecting their works, and for the hospitality extended to them. He expressed his pleasure at seeing some of the honorary members of the Association present; and took the opportunity of thanking one of these, Mr. Alan Reid (Brechin), with Mr. James Campbell (Dunfermline), for the gift of prizes for the best papers given by members during the session. He compared the developments of gas and electricity in the past, and the position at present; remarking that he could give a number of instances in which, as electricity came in, the consumption of gas went up. As a means of augmenting this, he suggested that the system of switch lighting should be pressed. Switch appliances should not merely be kept in stock, but should be put in front of the consumer. He congratulated the Carnoustie Gas Department on their excellent works, which were among the best in the district. Great credit for this must be given to the energetic Manager. In conclusion, he called upon the members to accord Councillor Duncan, Mr. Ireland, and his assistants, a hearty vote of thanks for the interesting afternoon spent at Carnoustie.

Mr. Ireland, in reply, thanked Mr. Clark for his flattering remarks, and explained that, if they had more ground, extensions and alterations would be more easily carried out.

Mr. Alan Reid (Brechin) expressed his pleasure at being present. He advised all to assist the gas industry in relation to the Government preference of electricity. The Electricity Bill, if passed as at present framed, would be extremely bad for the country. Fair competition was good; and to make the best of this, what was required was to render gas popular. They must secure the good feeling of the consumers, by giving good service. He had many public duties, but could not have taken these in hand had he not the assistance of a member of the Junior Association—Mr. R. L. Laing.

Mr. A. McG. Clark, after associating himself with the remarks made, thanked Mr. Reid for the privileges given Mr. Laing during the time he was Hon. Secretary and Treasurer of the Association.

An informal discussion followed.

SCOTTISH JUNIOR GAS ASSOCIATION (WESTERN DISTRICT).

A Meeting was held in the Royal Technical College, Glasgow, on Saturday, March 13—Mr. R. Gray (Hamilton) presiding over a large attendance.

Mr. Gray explained that the date of the closing meeting of the session had been altered from April 3 to April 10, in view of the Easter Holidays. Prof. Gray, of the Royal Technical College, Glasgow, would be the principal speaker; and the usual Social Evening would follow. He hoped the attendance would be up to the standard of former years.

SCIENTIFIC SERVICE.

Mr. S. H. Hunter (Chief Distribution Inspector, Glasgow Corporation Gas Department) read a paper on the subject of "Scientific Service," in which he traced the growth of the spirit of service from the earliest times, and then went on to deal, in the following terms, with its bearing upon his own industry.

It should not be difficult for those identified with a service for the distribution of light, heat, and power, as we are, to appreciate the good fortune that guided their choice of a profession or trade having for its purpose the achievement of such definite ends as those of the gas industry. Whether our particular undertaking is municipally or corporately owned, its service activities are identical.

We who are present at this meeting are the fifth generation of an industry whose history and associations have always been clear and honourable; an industry whose positive service value to the community is inestimable. We have accepted this mighty heritage, with its sacred obligations, from the great men whose tireless and unselfish devotion to the interests of the community built it on such sure service foundations that its ramifications extend into the lives and homes of every citizen of every town of western civilization.

With such a heritage, it is our bounden duty to continue to build as they built, keep sweet the record of gas service, and add our quota to its traditions. That we shall not do this without personal sacrifice, is probably known to us all. It is, however, one of the most glorious of human attributes that men will sacrifice their personal comfort, and even safety, for the wellbeing of their fellows; and not necessarily does this apply only to the emotional type of men, but it is a characteristic of the more evenly-balanced and deliberate type.

We shall all probably find greater opportunities in the future than we have had in the past; for the spirit of service within us finds little opportunity for individual expression except in conjunction with the endeavour of others. Modern conditions have so systemized industrial organizations that the operations of almost any section of collective endeavour immediately affect all sections of the industry to which it is attached. Although the term "gas men" might be used in correct designation of any of us here, its individual application means something different to each of us. Our general field of activity is so large, and the gestures of its movements so complex, that it must be admitted at once that our actions are so interdependent upon one another that, should any one section fail to serve in its best capacity, the whole of the industry would be retarded in its expansion.

In all the gas industry's various sections of energy, this service spirit has flourished. Experiments in manufacture and distribution in the past by individual undertakings, made in an atmosphere of the spirit of service, have, upon proof of their value, been accepted and adopted by the industry as a whole. I need mention only two—first, declared calorific value; and, secondly, constant pressure at the consumer's end. With these—perhaps only feeble—examples before us of something hoped for and something achieved by collective service, we may look into a future when the whole of our activities will be governed by scientific determination.

The possibilities of service scientifically controlled will make every action of every individual of every section of every industry productive of its greatest degree of use to the community. Wasted effort will be eliminated, whether it be of the intellectually weak or the intellectually strong. It has been my endeavour to explain how service has grown from the act of the primitive savage until it now occupies the first place in the soul of mankind; how it has permeated the community until it has reached a state which may be regarded as a jumping-off stage for its final destination. That destiny will be systemized through collective endeavour; its cult is the team spirit. We shall be well advised to adopt it to its fullest possibility, and take advantage of all that it offers us. It is a truism that the best team will always win. It is an established fact that the best equipped and most scientifically organized army will be consistently victorious. Under scientific control, the systemized scheduling of every grade of effort will assure that full opportunity is offered to each individual to exercise the best activities of his hand and brain. The round plug will be unable to get into the square hole, and the man who can only lay bricks will not be called upon to take the responsibilities of managing a large factory.

In our own business we have seen just recently the establishment of educational institutions which will act in the future somewhat on the lines of clearing houses. Through these channels will flow into the industry the controlling elements of the future. In the same manner, the technical schools with ever-improving methods will supply the various kinds of operatives. Both in common will draw upon the great fund of knowledge accumulated and recorded by those who have gone on ahead. Two of the first results will be improved service to gas consumers through perfected methods and happier conditions in the labours of those engaged in the industry; the latter accruing through the knowledge of duty well done.

Can we in any way anticipate this state of affairs? I think we can. If we will acknowledge to ourselves the beauty of service, and persuade ourselves into the Crusaders' spirit of adventure, we need not wait for the supermen to straighten out the path. We can apply ourselves to the job in hand, reduce sentiment to cold business logic, and get on with the cultivation of the team spirit, help to eliminate that nasty word "discipline," and insert "*esprit de corps*" in its place.

The manager's job will become 50 p.ct. easier if his staff will cut out 50 p.ct. of their errors. The staff will become 50 p.ct. happier if they have that less quantity of errors to account for; and our customers will get their gas cheaper *pro rata*. *Esprit de corps*, in so far as it means the team spirit,

is the first step to scientific service; being something more positive than blind loyalty—sterling quality though that may be—for, while being quick to serve, it will be generous in its response to its fellows' desire to serve.

Discussion.

Mr. GRAY, in thanking Mr. Hunter for his paper, said he had pointed out to the members the real meaning of the true spirit of service. The desire to serve seemed to him to be a natural one. Certainly everyone had not the same opportunity. Some had greater chances than others; but no matter what sphere they were called to, they had each his chance, and it was their duty to make such service wholehearted. In the gas industry to-day the need for true service was greater than ever; and if they might take a lesson from the Government's scheme to develop the electrical industry, they might say that it was their desire to give the public as a whole a greater service. They had seen from the recent Press reports that capital expenditure did not matter, so long as the public received a greater service. He was confident that, as the electrical industry expanded or developed, so would the gas industry; but there, again, this would depend entirely on the individual efforts of everyone connected with it. Such seemingly small service was of ever-increasing value.

Mr. JAMES CUBIE (Glasgow) also thanked the author for breaking new ground, and bringing before the members a paper quite apart from the usual technical subjects which they had under review at each meeting. No one would dispute what the author had said that night. It was only by organized service that any industry could survive; and the gas industry in particular could not survive unless it met the needs of those who sustained it. In commending Mr. Hunter's remark on the development of team spirit, he pointed out that it was useless for individuals to work against each other. In large undertakings, where the work was so sectionized, it was only by combined efforts that success could be attained. In the junior programmes, visits to the various undertakings and discussions on all topics went a long way towards helping individual members to give satisfactory service to their respective undertakings.

Mr. ANDREW WALKER (Kilbarchan) pointed out that to-day the average individual was more concerned as to his rights than as to the service he was prepared to give to his employers. If the spirit of service depicted by Mr. Hunter was adopted by men in the gas industry, a lot of the discontent which was so apparent at present would disappear.

Various other speakers joined in the discussion; and at the close Mr. Hunter was cordially thanked for his address.

Gas Company Taxation in America.—Taxes cost the gas companies of the United States $76·08 every minute. The total amount paid yearly is $40,000,000, at the present rate. A canvass of 213 representative gas companies showed a tax increase during the past year of nearly $250,000 over the year before. The 8·2 p.ct. ratio of taxes to gross revenue represents a heavy burden for the gas industry. A combined income statement of 261 electric railways, as reported in May, 1925, indicates a tax ratio of 6·7 p.ct. of gross income; and comparisons with other industries show a similar discrepancy.

Report of the Benzole Research Committee, 1926.—We have received from Prof. J. W. Cobb a copy of the latest report issued by the Joint Benzole Research Committee of the National Benzole Association and the University of Leeds. The work of this Committee represents the co-operative effort for the purpose of research between representatives of a large industry and those of the University; and the reports are some indication of the success of that effort. The nature of the work done is of special interest at present, because it is an attempt to increase, by the application of systematic research, the supplies of benzole motor spirit made in this country from coal. The report will be reviewed in a later issue of the "JOURNAL."

Chemical Engineering and Chemical Catalogue.—The Second Edition of this useful catalogue has been published by Leonard Hill, 173, Fleet Street, E.C. 4. As stated by Sir Robert Hadfield in a foreword to the volume, its very clear arrangement, enabling the buyer to find easily and quickly the names and particulars of British manufacturers of chemical products, and in a manner separated from the distractions of advertising display, should appeal to many. The comprehensive nature of the catalogue in combining the chemical trades with those of the many associated industries should prove of advantage to the busy man. The circulation of the first edition was world-wide; and it is interesting to note that requests for the second edition were received by the publishers months before publication. The price of the catalogue is 15s.

Correction.—In last week's "JOURNAL," there appeared an article by Mr. C. B. Tully on the "Simultaneous Production of Cheap Gas and Electricity." Unfortunately, an error crept into the first complete paragraph of the first column on p. 752. This should read as follows: "When the desired temperature is obtained, the stack valve is closed and steam admitted at Y. The steam is decomposed in the producer C, and (say) 75 p.ct. of the hot water gas generated is passed up through the fuel in the retort A, and away by the gas outlet pipe E. The remaining 25 p.ct. passes through the nostrils X into the checker chamber U, and by way of the duct X into the carburettor B, where it can be carburetted by the addition of gas oil, introduced at O. In case of the gas being carburetted, it will pass to the foul main *through the gas outlet T. But in the event of the gas being* required as blue gas, it will pass through R and the boiler Q, and away by the pipe P; and in this case the sensible heat of the gas will be used for the production of steam. Of course, the carburettor can be eliminated from the construction in such cases where blue gas only is required as a residual."

CORRESPONDENCE.

[*We are not responsible for opinions expressed by Correspondents.*]

Electricity (Supply) Bill.

SIR,—I am directed to forward to you a copy of a circular letter which my Committee are sending to the members of this Association. The Committee would be obliged if you could find room for it in your columns.

FRED. E. COOPER, Secretary,
The Gas Companies' Protection Association.

5, *Victoria Street, London, S.W.* 1,
March 24, 1926.

[ENCLOSURE.]

DEAR SIR,—The Committee have had under consideration the above-mentioned Bill; and I am instructed to inform you that they object to it for the following reasons.

(1) That it involves unfair competition with gas companies.
(2) That it places too much power in the hands of the Electricity Commissioners, from whose decision in matters which may, either directly or indirectly, affect gas companies there is no appeal to an independent tribunal.
(3) That it empowers the Treasury to guarantee the principal and interest of any loans raised by the Central Electricity Board created by the Bill, to a total amount of no less than £33,500,000. Such guarantee will, your Committee are of opinion, become operative, and the burden of it will fall upon the taxpayers of the country.

The Committee would be much obliged if you would kindly bring this letter before your Board at their next meeting.—Yours faithfully,

FRED. E. COOPER, Secretary.

Gas v. Electricity.

SIR,—It is difficult to refrain from comment on a speech made at the annual dinner of the British Electrical Development Association on March 19, and reported in your current issue.

The Chief Electrical Commissioner compared a consumption of 400 units of electricity per head of population in U.S.A. with 118 in this country, remarking that, as the Chicago Gas Company sold 10,000 c.ft. per head of the population, compared with 9000 c.ft. by the Gas Light and Coke Company, electrical development need not necessarily be at the cost of the gas industry.

In contrast to so fair an inference, the Glasgow Electrical Engineer, however, substituted biased opinion for fact. He said that development must inevitably be at the cost of the gas industry, and opined that gas ought not to be tolerated, thus unconsciously criticizing, and indiscreetly passing a vote of censure on, his own employers, the Glasgow City Council, who, in order to render public service in supplying about 9000 million c.ft. per annum in Glasgow, have already invested public money to an extent exceeding 4¾ millions sterling, and are prepared to increase it!

Another speaker tactfully tried to repair this unfortunate damage by asserting that greater consumption of electricity did *not* necessarily mean less consumption of gas; there being great opportunities and possibilities for both. A belief, let us hope, which is shared by the Glasgow Corporation, if not by their biased Electrical Engineer.

OIKONOMIA.

March 25, 1926.

British and Continental Gas Mantle Interests.

SIR,—I am directed to advise you that an agreement has been made between British and Continental incandescent gas mantle interests, whereby it is anticipated that the bulk of the business formerly done by Continental incandescent mantle manufacturers in the United Kingdom will be secured to British manufacturers, thereby affording employment for additional workers in British incandescent mantle factories.

W. H. WHITE, Secretary.

15, *Bedford Row, London, W.C.* 1,
March 30, 1926.

PARLIAMENTARY INTELLIGENCE.

HOUSE OF LORDS.

Progress of Bills.

Ascot District Gas and Electricity Bill, Darwen Corporation Bill, and the Halifax Corporation Bill: Reported with amendments.

Barnet District Gas and Water Bill, London County Council (General Powers) Bill, and the Newcastle-upon-Tyne Corporation Bill: Referred to a Select Committee to meet on April 27.

Special Orders.

The Darlington Gas Order, 1926, was laid before the House on the 23rd inst., and referred to the Special Orders Committee.

Smoke Abatement Bill.

Second reading was given to this Bill on March 23, and it was committed to a Committee of the Whole House.

HOUSE OF COMMONS.

Gas Regulation Act.

The draft of a Special Order proposed to be made by the Board of Trade under the Act, on the application of the Darlington Corporation, was presented on Monday, March 22.

The Gas Fund Accounts for the year ended March 31, 1925, were presented on Wednesday of last week.

Scientific Research.

The sums of £200,000 for the Department of Scientific and Industrial Research, and £96,000 for scientific investigation, have been voted under the Civil Services and Revenue Departments Estimates.

REGISTER OF PATENTS.

APPLICATIONS FOR PATENTS.

[Extracted from the "Official Journal" for March 24.]

Nos. 7080-7815.

Aird, K.—"Gas fires." No. 7791.

Aird, K.—"Grill burners of gas cooking stoves." No. 7792.

Chandler, D.—"Gas fires." No. 7690.

Dempster & Sons, Ltd., R.—"Gas-retort settings." No. 7099.

Dingle, J. L.—"Gas economizer." No. 7224.

Hewitt, F.—"Gas fires, &c." No. 7738.

I. G. Farbenindustrie Akt.-Ges.—"Manufacture of gaseous fuels." No. 7149.

Jennings, F. J. H.—See Hewitt, F. No. 7738.

Koppers Co.—"Fuel gas distribution systems." No. 7812.

Lynch, H. L.—"Gas ovens, &c." No. 7105.

Main, Ltd., R. & A.—See Aird, K. Nos. 7791, 7792.

Saunders, F. W.—See Hewitt, F. No. 7738.

South Metropolitan Gas Company.—See Chandler, D. No. 7690.

Toogood, H. J.—See Dempster & Sons, Ltd., R. No. 7099.

Wannebo, K. N.—"Manufacture of gas from oil or tar, &c." No. 7295.

MISCELLANEOUS NEWS.

EUROPEAN GAS COMPANY, LIMITED.

ORDINARY GENERAL MEETING.

The Ordinary General Meeting of the Company was held at the Offices, Montague House, Devonshire Square, E.C., on Thursday, March 25—Dr. Charles Carpenter (the Chairman) presiding.

The General Manager and Secretary (Mr. F. Eliot Williams) read the notice convening the meeting, the accounts for the nine months to Dec. 31 last, and the Auditors' certificate.

The Chairman said he did not expect when he addressed the shareholders last July that he should be so soon afterwards presenting another report. But financial conditions in France changed so considerably subsequently to his last address, that it became imperative to take steps to modify their procedure to meet the altered circumstances. One matter which pressed for consideration was the period of their working year. The variation in the volume of their business between one six months' period and the other in any year did not seriously disarrange their estimates when exchange was more stable; but with the rapid changes in the value of the franc, it became obvious that the six-monthly periods they had been in the habit of taking did not afford them an opportunity of judging fairly the position of the business. Therefore, to correct this, the Board had decided that the working year should be altered so as to provide two periods of six months which would be fairly comparable with each other by reason of the fact that each would have a similar amount of the heavy winter-time consumption and the light summer-time consumption. It would be obvious that a period starting on April 1 and running to the end of September would embrace only the light months, while that from the beginning of October to the end of March would include the whole of the heavy winter consumption, so that these six-monthly periods would not be fairly comparable. The Directors found that, under existing conditions, the difficulties arising in respect of this were so serious that they had determined to close the accounts at Dec. 31 last, instead of, as previously, at the end of March. The closing of the accounts at December had the further advantage of permitting the Directors to take measures at once to minimize the effect of future exchange variations so far as the valuation of the net floating capital was concerned.

The value of the franc, which stood at 89.85 to the pound on April 1, 1925, had depreciated on Dec. 31 last to 129.81—a fall of nearly 40 points. This fall affected the Company's operations in two ways. In the first place, the sterling value of the profits earned was naturally reduced; and, in the second place—and what was far more serious—the valuation for balance-sheet purposes of the net floating capital in francs showed very severe depreciation, which, in the present instance, had more than neutralized the profits earned. In some ways the depreciation was a fictitious one, because, in so far as the stocks and materials were concerned, they were for use in the business, and there was no question of their realization. But, as an English Company, what they had had to do was to prepare a balance-sheet in which everything was expressed in sterling; and it was impossible to avoid valuing the floating capital at the exchange rate ruling on the date of the balance-sheet. The Directors felt that the possibility of a permanent and material improvement in the value of the franc in the near future must now be regarded as unlikely; and in the uncertain political position in France, further depreciation did not appear improbable. They considered, therefore, that the time had come to take steps to eliminate as far as possible from the Company's accounts any future variations due solely to the rate of exchange. It had to be remembered that the Company was an industrial concern, which must look for its profits and dividends to its working results; and adventitious profits which resulted from exchange were as much to be deprecated as loss would be from the same cause—the more so as both were of an illusory nature, and existed largely on paper. Moreover, while the possibilities of recovery in the franc seemed to be limited to at most 20 or 30 points, the possibilities of further depreciation appeared to be more unlimited. The Directors, therefore, after consulting experts on foreign exchange, banking, and accounting, decided, on their unanimous report, to take measures which would for the future exclude from the Company's accounts any gains or losses due to the variations in the valuation of the floating capital abroad. These measures consisted in the main of the neutralization of the net floating capital by the creation of corresponding franc liabilities, so that any rise or fall in the valuation of the assets would be met by a corresponding rise or fall in the valuation of the liabilities, and the net assets at risk would be therefore reduced to zero. This had been achieved by the conversion of the sterling loan from the Company's bankers into a franc loan, and by the forward sale of francs. These transactions were carried through at rates slightly better than the rate ruling at Dec. 31 last; and therefore for the year 1926 any risk of loss under this particular head was precluded. Measures had also been taken to deal with current transactions between the head office and the stations abroad in such a way that the exchange was covered at the time, and all risk of loss was obviated.

There were, of course, other risks connected with the variations in the value of the franc; but it did not seem possible to take any steps to eliminate these. In the first place, there were the charges made against station profits for the amortization of the capital and the depreciation of the plant, which, as the shareholders were aware, was part and parcel of the basis on which the Company was organized. These were sterling charges, to re-instate the sterling capital which had been put into the business by the shareholders; and if the franc were to emulate the German mark, the sterling charges would become so enormous, when converted into francs, as to swamp the franc profits. The second point was the actual value in sterling of the profit earned in francs. For this, of course, they could not get more than the current value as indicated by the exchange quotations. Therefore, as the franc continued to depreciate, it became more and more difficult for the Company to make a profit on the business. It was clear that continued depreciation to a similar extent in the value of the franc, which in 1925 had created a new record of 136, and since Dec. 31 had touched 139.75 to the pound—he believed that morning the quotation was 140—would place the Company in a very difficult position, and seriously jeopardize its dividend-earning power. From time to time the Directors had been hopeful that the franc would become stabilized. They had shared the general opinion that the stabilization of the franc at a reasonable rate was of such vital necessity to the interests of France, that every sacrifice would be made by the French Government and the French people to put their finances on a sound basis; and they had optimistically hoped from day to day for such a stabilization of the position, and such an improvement in the exchange value of the franc, as would compensate for the losses hitherto suffered by its depreciation. They had been supported in this belief by the terms of the loan issued by M. Caillaux, when Finance Minister, by which the rate of interest was made dependent upon the sterling exchange. The normal rate of interest was

calculated at 2 p.ct. for the half-year with the exchange at 95 or less, with the provision that, if the exchange went above that figure the rate of interest should be 2-95ths of the average rate of sterling during the previous six months. The conclusion to be derived from the terms of this loan was that the Government contemplated the stabilization of the franc at about the figure of 95; and the Directors, feeling that the Company could support without serious damage a rate of (say) 100 frs. to the pound, were for the moment satisfied that the franc was within measurable distance of stabilization. However, M. Caillaux fell, and the rate went steadily and rapidly worse, with the result which was indicated in the report.

So far as trading profits in France were concerned, the Company had had two adverse factors with which to contend. In the first place, there was the high price of gas. He had referred to this on the last occasion; and it still was one of their troubles. The second adverse factor was that, under the formulæ pertaining to the various stations —to which he had also referred at the last meeting—the gas prices lagged behind the corresponding prices of materials; and, with a falling exchange such as had operated throughout the nine months, the prices of materials in France had risen steadily, and the price of gas had been constantly behind. In spite, however, of these difficulties, the fact remained that the franc profits had closely approximated to the nine months' proportion calculated on the whole of the previous year. The profits could, indeed, be regarded as adequate, if considered alone; but they were naturally totally inadequate to meet the exchange loss, which was equivalent to something like one-third of the Company's net working capital. With the accounts closed at Dec. 31, and with a full knowledge of the position, it became possible to ascertain the extent to which general revenue would be depleted by the loss incurred. As already announced, the Board recommended the distribution of 4s. per share, free of tax, which would absorb approximately £20,000 of the general revenue fund, which in recent years had been added to, as and when opportunity offered, for the express purpose of providing a dividend in lean years.

With regard to the future of the Company—which was not less important than the position to-day—this was still very largely dependent upon the stabilization of the franc. The measures which had been taken by the Board to deal with the variations in exchange to which he had referred would cost somewhat more than a continuance of the old system, mainly because the rate for loans in France was higher than the rate in London; but they must regard this extra interest as an insurance premium against unknown possibilities in the way of loss. In the past nine months, for instance, had the new system been in operation, while they would have paid some additional interest, they would have more than saved this extra sum in valuation of their assets. In July last, he had, so far as he was able, indicated very clearly the need for caution in regard to the Company's future prospects; and everything he said then, he thought, had been amply justified by recent events. It was to-day even more difficult than was the case last July to see through the complicated situation in connection with French finances. From many points of view France was in a strong position, and was very prosperous. The people were on the whole wealthy. It was the Treasury which was empty; and the Deputies appeared to be more concerned to conciliate their constituents by refusing to vote taxation (which would naturally be unpalatable) than to put the State finances on a sound basis. It did not seem unreasonable to assume that France financially was stronger and sounder than either Belgium or Italy, who had done something towards stabilizing their exchanges at rates substantially better than those which had recently been ruling for the French franc. There had, however, lately been a break in the Belgian exchange; and he supposed they must take this as an object-lesson that stabilization must be based on sound financial principles, and not, as he understood was the practice with Belgium, on buying francs for the purpose of keeping the price up. If the stabilization was carried out by making revenue and expenditure meet, then its principle would be sound; but anything else could not be. This apparently was the explanation of what had happened with Belgium. Whether France would be able to stabilize her currency now at so good a rate as could have been done some time ago, remained to be seen. But whatever happened, stabilization must bring increased taxation; and this would, of course, fall upon their Company as it would upon all other industrial undertakings in France.

Apart from financial questions, which were all-absorbing, the nine months under review had been comparatively uneventful. No considerable work had been carried out at the works, except for normal current expenditure. As the report informed the shareholders, progress had been made in the direction of overhauling the system of mains; but the further the examination of the pipes was carried, the more were the defects of the mains revealed. They must not, therefore, expect for some time yet any substantial reduction in the amount of unaccounted-for gas, which was one of the Company's weak points. It was curious that over the whole of France there seemed to be the same difficulty as there was at the stations of their own Company with regard to this rapid deterioration of mains and consequent great loss of gas. What it was due to was not very clear; but there was some suspicion that it had resulted from the extraordinary steps taken during the war—or perhaps he might say from the necessary disregard during the war of the various normal precautions in the conduct of gas undertakings. Whether it had or had not arisen from this cause, the fact remained that all over France the same trouble as they themselves were encountering was being experienced in connection with systems of mains. It would take some time before this condition of affairs could be corrected. Notification had been received that the French law making the extraction of benzole from gas compulsory was to be applied to several of the Company's works, and unfortunately they had no option but to accept this obligation. It was part of the agreement that if, on the one hand, the Government lent a friendly ear to the request that the altered conditions of gas supply should be taken into consideration, on the other hand, as a price for this, the gas undertakings must when requested take the benzole out of the gas, in order that it might be placed at the disposal of the Government for munition purposes, dyes, and other uses. This bargain had had to be entered into; and although it was one that personally he very greatly regretted, there was apparently no way out of it. It was the law of the land; and if the authorities required them to put down plant for extracting the benzole, they had to do it.

He had shown the shareholders the dark side of the situation—the clouds—first; and now he would point out to them the silver lining. In spite of the steadily rising price of gas, which came about through the automatic working of the formula—for he might point out that the formula took into consideration the increased cost of labour, which, little by little, was going up at the various works—both the consumption and the number of consumers went on increasing, and considerable numbers of gas fires and cookers had been placed. This was very satisfactory. In England, as the shareholders knew, the reduced consumption of gas in respect of lighting purposes, owing to the increased use of electricity, had been more than compensated by the greater use of gas for cooking and heating; and it was interesting to find that in the case of France—which was a nation even more conservative than England, and which had brought the art of cooking, and in many respects of heating by the use of closed stoves, to such a high state of perfection—the use of gas cookers and heaters was extending. There was no doubt, however, that the high prices which it was unfortunately necessary to charge for gas did militate against the development of the consumption; and it was increasingly difficult to maintain steady progress. Figures got out for the Board and carefully examined month by month went to prove that, as in England, the increase in the price of gas was having its effect upon consumption. There were signs that the consumers were feeling the pinch of the increased cost of living, and, among other economies, were trying to reduce their gas consumption to a minimum. Coal supplies had been purchased at prices substantially lower than in the preceding period; but this advantage was more than balanced by the rising quotation for the franc. So the net result was that the price of coal in francs delivered on to the works did not show the reduction which might have been expected. A question had been asked at the last meeting with regard to the use of French coal; and he had pointed out at that time that it was a matter of price, and that, in addition, there was not enough French coal to go round, so that France still had to import large quantities of English coal. As the result, however, of the high price of English coal, substantial quantities of French coal had been purchased in the period under review. As a matter of fact, a larger proportion of French coal was now being used than ever before in the Company's history. As for residuals, the market, on the whole, had been weak. The two important residuals—apart from coke—were tar and ammonia. Tar was becoming more popular on the French roads; and he hoped that in due course the Company would receive the benefit of this in the shape of an increased price. With regard to ammonia, however, the outlook was not so promising, because there were very large quantities of artificial ammonia coming on to the market all over the world, made by the synthetic method; and this was bound to compete with the naturally produced article.

He might remind the shareholders that it had been necessary since the war practically to reconstruct the whole working basis of the Company. First of all it became necessary, as he had already told them, to revise the whole of the contracts with the municipalities of the towns they supplied in order to provide means of adjusting the prices of gas to post-war economic conditions. This had now been followed, as he had explained, by a complete change of the Company's financial methods, in order to provide against exchange variations. Both these adjustments had been revolutionary in their character, and had been equally vital to the continued efficient working of the Company. Perhaps he might say that the whole of the Company's system of accounting and book-keeping, both in this country and abroad, was being brought up to date in accordance with modern methods, thus enabling the Directors to keep in closer touch with the business abroad, and to have before them details of the financial results at much more frequent intervals than was the case under the old system. In conclusion, he would like to say that very great praise was due to the staff, both abroad and at home, for the admirable manner in which, under considerable pressure of time, they had carried out all these changes. They had involved a great deal of work. More especially was this the case in France, where the changes made coincided with the busiest part of the year for gas and coke sales. But one point remained. The Directors who retired by rotation were brought forward for re-election, although, strictly speaking, their mandate did not expire until July next; and the same remark applied to the Auditors. In future the year's accounts would be closed on Dec. 31, and the general meeting would be held in the month of March. The final dividends would be paid on April 1, and the interim dividends on Oct. 1, in each year. These were all the remarks he had to make, and he would now move the adoption of the report and accounts.

The Deputy-Chairman (Mr. Frank H. Jones) formally seconded the resolution.

Mr. Howell said he had meant to ask how the position was going to be met if the franc went worse; but he saw the Directors had done what they could in this way. If, however, the political situation prevented France from "putting her house in order," the franc might go almost as the mark had gone; and what was going to be the position of the Company if that should happen? The franc might go to 3000 to 4000. Had it ever been suggested that they should sell their business to the municipalities concerned? At present the £10 shares were worth about £6 each, and he should imagine that the future position could not be regarded with confidence; whereas if it were possible to sell the undertaking, they would, allowing for the fact that there was a considerable reserve fund, probably get a good deal more than £10 each for their shares. It was a pity to have to contemplate such a thing as the winding-up of the Company;

but after all, they must think first of their pockets. He therefore put forward the suggestion that they should sell the concern.

Mr. Pearson said he could not quite understand why it was that the Continental Union Gas Company, who had not for some years been paying a dividend on its ordinary shares, should have been able to start doing so again. If that Company were not affected in the same way as their own, why could not the European Gas Company put themselves on the same basis?

Mr. Fletcher remarked that the Imperial Continental Gas Association were able to pay a good dividend; and he supposed they laboured under the same difficulties with regard to the depreciation of the franc.

Mr. Jacob asked whether it would be possible to sell their stations to a French Company, and turn themselves into a "holding Company." The effect would be that the French Company would always make profits in France, and the English Company would always have their holdings—they would not lose capital.

The Chairman, in reply, said that, with regard to the possible course of the franc, he could not visualize such a state of things as would result in it going to anything like the figures that had been mentioned by the first speaker. It would be so extremely serious for both England and America, that personally he could not picture any position of that kind. As to selling their works, he should think that a more unfavourable moment than the present for considering that question could hardly be found. One of the things which had led to them being able to renew their concessions on the terms they had done had been the inability of the French themselves to raise money for these and similar purposes. He did not think it at all likely that the Company would derive any advantage from a change of that kind. The Continental Union Company were a holding Company; whereas the European Company were not. The latter had obligations with regard to their works. He was not quite clear as to what they would gain by transferring their property and becoming a holding Company. The outstanding trouble was depreciation in the value of the franc; and whether they transferred their profits themselves from France to this country, or whether it was done for them as a holding Company, it seemed to him that the result would be the same. The franc, which was at 86 a year ago, was now at 140 to the pound; and he did not see how anything that could be done was likely to affect this. He had tried to make clear the steps that had been taken by them to preclude the possibility of future loss in this respect, except the loss in the value of the franc when actually converted into sterling. Hitherto the Company had worked on a method which had answered their requirements for all the years they had been in existence. Now, as the result of the unexpected depreciation of the franc, they had adjusted themselves, practically to the position occupied by the Continental Union Company.

Mr. Jacob: Has the whole of the loss resulting in the depreciation of the franc from 86 to 140 to the pound been written-off in the last nine months?

The Chairman: Absolutely.

Mr. Jacob: That is very satisfactory.

The Chairman: It is satisfactory in every respect except that the results for that period are bad. It is a tribute to the soundness of the business that we are not in a worse position. We have been able to stand-up to this enormous fall in the value of the franc. I would suggest that there is no cause to be pessimistic, because, although there may be the possibility of some enormous slump, I cannot imagine that it will take place. I suggest that you should put out of your minds, in present circumstances, any question of parting with your oroperty. My advice—and I give it with a due sense of responsibility—is that you should carry on and look forward to a better time in the future, though still nothing like the times we were accustomed to in pre-war days.

The motion for the adoption of the report and accounts was then put to the meeting and unanimously carried.

On the proposition of the Chairman, seconded by the Deputy-Chairman, it was agreed:

> "That a dividend for the nine months ended Dec. 31 last, at the rate of 4s. per share, be now declared; such dividend, on all the shares of the Company, to be paid on April 1 next, the whole out of interest and profits, and free of income-tax, subject, however, to a deduction for French stamp and transfer duty of 9d. per share in respect of all shares held in France."

The Deputy-Chairman moved the re-election as a Director of Dr. Charles Carpenter. He said he was sure the whole of the shareholders realized that, whatever the difficulties of the Company might be, one person knew how to tackle them—and that was their Chairman.

Mr. W. G. Bradshaw seconded the proposition, which was passed with applause.

The Chairman said he was very gratified at the way in which the proposal had been received by the meeting. They had gone through a very anxious time; but he felt much more hopeful with regard to the ensuing twelve months, and looked forward to coming before the shareholders next year with a better story than he had had to tell that day. If he were not in this happy position, it would be due to matters entirely outside the control of the Board.

Proposed by the Chairman, and seconded by Mr. A. M. Paddon, Mr. John Mews was re-elected a Director; and on the motion of Mr. Fletcher, seconded by Mr. Donne, the Auditors (Messrs. G. C. Goldsmid and W. B. Brady) were also re-appointed.

The Chairman said he now had to propose that the best thanks of the meeting be given to the staff of the Company in London and abroad for their services during the period covered by the accounts. He had already spoken of the great exertions the staff had made to adjust their conditions to the new methods. Their work had been admirable in every way. In circumstances of great pressure, they had adapted their book-keeping and accountancy to the new conditions.

The Deputy-Chairman seconded; remarking that their warmest thanks were due to the staff, not only for the manner in which they had performed their normal duties, but for the special work they had done. Personally, he wished that all the shareholders could go to France and see their works. They would not then wish to sell them.

Mr. Eliot Williams, in acknowledgment of the vote (which was cordially passed), said it would be specially welcome to the staff in France, because they had earned the shareholders some profits, and if the shareholders had not got them it was due to nothing that the staff were responsible for, but to the exchange.

Mr. Johnston next proposed a vote of thanks to the Chairman and Directors for the work they had done on behalf of the Company. The fact that the results had not been as happy as might have been wished, really made their thanks the more due to the Board, because he was quite sure the time they had gone through must have been a very worrying one.

Mr. Murray, who seconded, said that those who had been shareholders in the Company for a very long time had not come to the meeting with any desire to be critical, but with a reasonable feeling of anxiety with regard to the existing abnormal conditions; and he thought that, after the vote of confidence which had been sounded by Dr. Carpenter they would all wish to stand by the Company and their very excellent Chairman.

The vote was heartily endorsed by the meeting.

The Chairman, in acknowledgment, agreed that, on an occasion of this kind, the Board really did deserve the thanks of the shareholders. They appreciated highly the fact that so many shareholders had been able to attend that day; and they appreciated it for two reasons. In the first place, it was pleasing to have such tangible evidence of the interest of the shareholders in the affairs of the Company; and, in the second place, it was desirable that capital should keep in touch as closely as possible with the various undertakings in which it was concerned, and should fully understand the conditions under which the money was earning interest.

BIRMINGHAM GAS DEPARTMENT.

Reconstruction of Carbonizing Plant at Saltley.

The Birmingham Gas Committee propose to reconstruct the carbonizing plant at the Saltley Gas-Works. In their report to the City Council, they state that on March 7, 1922, they pointed out that the manufacturing plant at the various gas-works would enable the demand for gas to be met for the next six or seven years, but that the new works at Washwood Heath would then be required, and intimated that expenditure upon these works might have to be commenced during 1923. Owing, however, to the increased efficiency of carbonizing obtained by the modern type of vertical retorts installed at the Nechells, Windsor Street, and Swan Village Works, it has been possible to defer the erection of new gas-works on the Washwood Heath site. The increased demand for gas—particularly during the severe weather of the past winter—has necessitated careful consideration of the manufacturing capacity of the Department, to meet the requirements of their consumers. New daily records of output were established during the months of November and December last; and in the week ended Dec. 5, the output was 362,585,000 c.ft., or nearly 28½ million c.ft. more than the previous highest weekly record, which occurred in the week ended Jan. 12, 1918. The Committee are anxious to defer as long as possible the large capital expenditure which will be involved in the erection of new gas-works, and, with this object in view, propose to continue their policy of reconstructing existing manufacturing plant, and the installation of modern vertical retorts on the present sites. Such reconstruction, as already mentioned, has taken place at Windsor Street, Nechells, and Swan Village; and the time has now arrived to substitute vertical retorts for the old inclined retorts at the Saltley Works. The Committee propose to dismantle one-half of the inclined settings, and replace them in the same retort house by modern verticals, which will enable the productive capacity of the Saltley Works to be increased by 4 million c.ft. per diem, and bring up the total make of gas at all the works of the Department to approximately 448 millions per week. It is estimated this increased production will meet requirements for the next five years, and will defer commencement upon the new Washwood Heath Works until 1928-29. The reconstruction proposed at Saltley will take twelve months to complete. The Committee, subject to the Council's approval, have accepted the tender of the Woodall-Duckham Vertical Retort and Oven Construction Company, Ltd. (the makers of the vertical retorts at the Windsor Street, Nechells, and Swan Village Works).

The Committee refer to the necessity that will arise, in the near future, for obtaining sanction for borrowing powers for capital purposes. Since January last they have reviewed, so far as is possible, the probable expenditure on capital account which will be necessary between now and the end of 1928. The various works contemplated are given below, together with the dates they will probably be commenced:

Work to be Done.	Date.
Remodelling coke screening plant and breeze washer, Nechells.	1926
Increasing storage ground for coke at Nechells, including the covering of the River Rea, &c.	1926
New stove and meter shops, Windsor Street	1926 & 1927
Extension and reconstruction of purifiers, Windsor Street and Saltley	1926 & 1927
Construction of pan ash washer, Nechells	1927

The total cost of these items is estimated at £184,000, of which it is anticipated £176,000 will be capital expenditure; and the Committee recommend that they be authorized to proceed with the works.

RADIATION LIMITED.

At the Annual Meeting of the Company held at the Queen's Hotel, Birmingham, on March 24, Mr. H. JAMES YATES, the Chairman, in moving the adoption of the report and accounts, said: In the progress of your Company's business, the past year has been an eventful and an interesting one, and I shall deal presently with the results of our trading; but first of all, there are certain important matters affecting our business upon which I desire briefly to touch. So much has been said and written about the labour difficulties of to-day, that I am not going to dwell on them in detail. It is impossible to expect static conditions when dealing with such a dynamic force as is represented by the millions of people engaged in industry. But there is, nevertheless, a duty placed upon us all, to have an intelligent regard to industrial movements and do what we can to mould them in the direction best for the country. I think I may reasonably claim, after an experience of more than thirty years as an employer, to know something about the working man, and to understand and appreciate his point of view and his difficulties. There is no better type in the world. On the whole, there is none more capable, more influenced by traditions, more reasonable, or more good-tempered. Moreover, when one finds a factory in which good relations exist, and the team spirit is evident, from the head right down to the smallest unit, one almost invariably finds a factory that is prosperous and that achieves what it sets out to attain. It is important, therefore, to find out why, in spite of these considerations, we are at the present moment passing through such difficult times, with threats of stoppages, and faced with demands which, if made effective, would destroy our position as a manufacturing and export nation.

The probability is that there have been and remain faults on both sides. There are bad employers who do not attempt to appreciate the difficulties of the workpeople's position. They do not get personal loyalty, because they do not display any personal sympathy. Their case is frequently misunderstood by the workers, because they do not take the trouble to try to teach the men the economics of the particular business in which they are engaged. There are employers, too, who create antagonism by, for example, unnecessarily cutting piece-prices from time to time. In so doing, they merely penalize the worker for producing to his full capacity, and destroy the possibility of enjoying his confidence. It has been found that a recognition of the principle, that once a reasonable piecework price has been arrived at, it should not be altered—except by mutual consent—has fostered a degree of energy and given a volume of output greatly to the interests of both sides.

But, in my experience, the bad employer is an exception and not the rule. The majority are imbued by a very real desire to act squarely, to cultivate a good understanding, and to return to the workers as fair a proportion of the proceeds of industry as all the circumstances of the case will permit.

Similarly, the great majority of trade union leaders and officials are sound men, who are able to take a well-balanced view of the questions at issue, and who desire to secure and maintain good industrial relations. It has taken the workers many years to create and build up their trade union organizations, and there can be little doubt that, if conducted on reasonable business lines, they are essential to the interests not only of the workpeople, but of the employers too, and of the country.

But there are a few men in some industries who do not desire to be reconciled. Their mentality, being abnormal, is uninfluenced by normal considerations. They are inspired, not by a desire to make the best of the present industrial organization—which is the result of centuries of evolution—but seek to destroy it for the sake of some theoretical system which, as a matter of fact, is not likely to take form outside the imagination of the doctrinaire. Such people, in denouncing the capitalist as a point of principle, entirely lose sight of the fact that the capitalist of to-day is often the working man of yesterday who, by foresight and determination, and usually by considerable personal sacrifice, has succeeded in raising himself on the industrial ladder, and in nearly every case he is performing a valuable function in the social economy. A good deal of reliance may be placed on the sound common sense inherent in the British character. At the same time, not the least of our problems is to maintain an atmosphere in which reason and good sense may have an opportunity to justify themselves. To this end, it is necessary that we should all do what we can, first, to cultivate a state of industry that will make goodwill possible, and, secondly, to discourage the activities of those who are so constituted that their natural tendency is to seek a line of action that will subvert industrial peace and good order.

An idea which at present is strongly advocated by sections of the workers, that wages could be substantially increased on a uniform and fixed basis, seems to me fundamentally wrong. Any company trading in normal circumstances which had to increase their wage bill by (say) £1 per week per man would be faced with the alternative either of distributing the whole of their profit and probably some of their capital in additional wages, or in passing on the burden to the consumer, if this were possible. In the latter event, the effect would merely be to increase prices, and the country would be starting again on the old vicious circle from which, for the past year or two, we have been trying to escape. Moreover, if any individual company or companies were prosperous enough to meet such a demand as I have indicated, the result would be an immediate reaction upon other firms who are not so fortunate, and would probably result in driving them out of business.

Now, I have never been a believer in screwing down the wages of the workers; I hold that every man should be able to earn sufficient to bring up his family in a healthy, happy condition, and to provide for himself and for them the reasonable amenities of life. And I believe that this can be done if there exist the will to work, and confidence in each other. The hours of labour must be reasonable, so that a worker may have fair leisure. On the other hand, we are entitled to demand that while he is in the factory he should work with a good heart, and give full, honest, and unrestricted output.

It is sometimes a practice of the workers to measure the rate of output of a shop on the basis of the poorest worker, and not on that of the average worker. The net result is reduced production, higher costs, and a general inability to meet the social standards which are nowadays expected. The system of piecework to which I have already referred is a sufficient safeguard. If a man is willing and able to produce a larger output, he can earn bigger wages and so improve his standard of comfort, without putting a further tax on industry, which, frankly, industry is unable to bear. Moreover, it should be clear that a bigger spending power in the home market without any increase in the cost of production is one of the shortest roads to general prosperity. High wages and restricted output are a double curse, because they destroy the markets in which the employer sells, and merely put up prices to his disadvantage in the market in which the worker buys. The case of the Companies associated with Radiation provides an interesting proof of some of the considerations I have been trying to put before you. These businesses have grown so much that large extensions have been necessitated to all the works. The turnover has been enormously increased. How has this been possible? Those in control are hard workers themselves. We have continued, as a result of spending large sums in research, gradually to perfect Radiation goods, which are better to-day than ever they were. Though, owing to improvements made, the goods to-day are costing more in actual manufacture than formerly, the prices to the public have been reduced. The secret lies in output. The largely increased business has enabled us to earn a reasonable return on the capital invested, without doing so at the expense of the workers or by penalizing the public in higher prices for our goods. I venture to suggest that this is the road along which general progress should be continued. It is the goal to which employers should set themselves, and it is a policy in which all workers would be well advised to co-operate. In summing-up this expression of my views on the industrial position, let me say that I am still an optimist. It is possible to give increased remuneration as a reward for increased production. It is possible to increase production to the general advantage, by promoting an atmosphere of co-operation instead of adding fuel to the fires of discord. There is still plenty of opportunity to exploit material resources for the good of both employer and worker; but it can only be done if they pull together, instead of apart. We have to live together, and, consequently, we might as well try to agree together. A little more understanding, a little more good fellowship, and many of the difficulties which are to-day hanging over the country would disappear, and a new and brighter era open up for us all.

RESEARCH WORK.

On numerous occasions I have referred to the research work we have been doing for so many years past. In each of our works we have our chemical and physical laboratories, which deal with more or less routine work, and in some of these laboratories we have also carried on pure research work. I have long kept steadily in view, however, the purpose of establishing, in connection with our business, laboratories devoted to pure research work alone. That ideal has now been attained by the establishing at Radiation House, London, which is my own headquarters, of central laboratories for the Company, equipped with the most complete appliances and apparatus for carrying on research work related to our business. You may remember that a year ago I told you that these central research laboratories were in course of construction. The work having since been completed, they were formally opened, on Oct. 1 last, by Mr. D. Milne Watson, the Governor of the Gas Light and Coke Company, when a large number of engineers and scientific men were present.

Since the opening of these central research laboratories they have been inspected by many visitors whose lives are devoted to scientific investigation; and there has been on their part cordial appreciation with regard to the researches we are carrying on into subjects of a nature fundamental to the gas industry. It does not follow that we shall be able to make direct use in every case of the results of our investigations; but this pure research work is the vital breath of our business and of our industry at large, without which we should not be able to achieve the developments to which it leads. It is as a consequence of our research work that the goods manufactured by your Company have all along been in the van of progress; and it is our determination that the length of the lead we hold shall never be shortened.

NEW GAS COOKER CONSTRUCTION.

Up to the present, as a result of our research and experimental work, continued year after year, at a very heavy expenditure, we have established and embodied in the construction of our new gas cookers a number of features which we regard as not merely important, but actually lying at the root and foundation of all proper design of such apparatus. We never doubted that these features would revolutionize gas cooker design; and this belief has now been conclusively justified by the wide and rapid appreciation our new apparatus has received, from both scientific and technical authorities, and from the public. We therefore feel warranted, in view of our original research work and the heavy cost in which it has involved us, in putting on record clearly and permanently the fact that it was Radiation who originated these memorable developments. But in the interests of all concerned, it is necessary to point out that you cannot convert "old lamps into new." In the case of the original features which we have introduced, these are designed, not as independent contrivances, but as parts of an apparatus which form a homogeneous whole. It is only when so used that they will give those unequalled results of which they are capable.

They cannot be patched into old apparatus without disappointment being bound to ensue, with unsatisfactory results to the user, and a limited life for the appliance. In this connection, I will refer to four principal fundamental features of our new gas cooker construction:

(*a*) *Hotplate Burners.*—The old drilled-ring type of burner has been replaced by a flame-spread burner which we call the "Rado." There is no smell from this burner, and it ensures complete combustion without distortion of the inner cone under changes of gas pressure. "Rado" burners cannot be choked or extinguished by food boiling-over on them. An additional valuable feature of the "Rado" burner is that it gives the highest thermal efficiency of any boiling burner made. With the "Rado" burner adjusted on our cookers to burn 15 c.ft. of gas per hour, water can be boiled, or any other similar operation carried out, in the same time as was done with the burner adjusted to burn 25 c.ft. of gas per hour in older types of cookers. When it is remembered also how often a boiling burner is left alight after it has done its work, it will be appreciated what a considerable saving of gas is effected as the result of our having succeeded in designing this "Rado" burner to burn gas at so much lower a rate than the older type. Just as it has been truly said that there is more mustard left on one's dinner plate than what is eaten, it may be said with equal truth of a gas cooker hotplate burner that, through careless neglect to turn out the gas when done with it, there is often more gas wasted than what is consumed for actual use.

(*b*) *Hotplate Construction.*—The hotplate is constructed on the unit principle, which is a big advantage to the user, and a still greater benefit in the case of gas undertakings, as it reduces to a minimum the number of separate parts they require to stock and handle. Where the user benefits is that when the parts of the hotplate are taken out for cleaning, all parts being strictly interchangeable, none can be put back into a wrong place.

(*c*) *Oven Flue.*—The practice has always been to place this at the top of the oven; but in our latest Radiation ovens the flue outlet is placed at the bottom of the cooking space. As a result we have attained the highest thermal efficiency of any gas cooker yet made. This gives a direct economy—less gas is consumed. There is also another improvement which we have introduced in these ovens—namely, that, whereas in ordinary types of ovens the space above the burners for some distance upwards is of little value for cooking, the whole of the cooking space in our type of oven is good cooking space.

(*d*) *Thermostatic Control.*—We have introduced into gas cooker ovens the principle of thermostatic control. The type of thermostat we are using is one which has stood the test of time. We have been producing it for nearly thirty years, but we have only lately, after much experimental work, been able to adapt it to a gas cooking oven. The "Regulo" is the registered name of this, and it has no mechanical parts to go wrong; it is simple and effective. With it, perfect cooking results are attained always, and the working of the oven is independent of any change which may occur in the calorific value of the gas or in the pressure of supply. It renders the oven foolproof, and inexperienced persons can cook perfectly with it—they have only to set the "Regulo" to the instructions given on the chart accompanying the cooker. This information will satisfy you that our latest types of gas cooker are on the same efficient and high standard as the Radiation gas fires, than which there could be no higher praise.

"THERMO XX" GAS GRATES.

I referred a year ago to the continued great increase in the volume of business in the Radiation "Thermo XX" injector-ventilator gas grates; and you will be glad to learn that there has again this year been a similar progressive extension of that important branch of our business. Our injector-ventilator invention brought forward the gas fire to a position fully abreast of the coal fire in the matter of ventilation—as it has already surpassed the coal fire in all the elements of convenience and labour saving. In this way, to the injector-ventilator, more than to any other single factor, is due the greatly quickened and extended popularity of gas-heating to-day.

ADVERTISEMENT.

A few years ago we decided to enter upon a large advertising scheme. We hesitated for some time before putting this into operation, as we realized that unless this was done on a large scale we should not derive the full benefit of our expenditure. All of you must have seen the Radiation advertisements, but there is much going on that you do not see. We have made Radiation a household word. Our advertisements not only appear in daily and weekly papers and periodicals; they cover a very much wider area. Some of you may probably have seen in the cinemas Radiation films, which, while having an advertising purpose, are in themselves most interesting and amusing. These films have appeared in a very large number of important cinemas in this country, and also in the Colonies and on the Continent. They have brought the uses of gas in the home before the people in a way that nothing else could have done. In every compartment in every train on the tubes and underground railways in London, advertisements of our gas fires and cookers appear; and these are seen by millions of people during the year. We have many other forms of advertising, with the details of which I will not trouble you. Our advertising expenditure has grown yearly, but we are fully satisfied that it is money well spent. The wording of our advertisements is most carefully considered, and it may interest you to know that every statement made in our advertising literature regarding our apparatus is made with the same scrupulous accuracy and sense of responsibility as if it were part of a paper to be read before a scientific society; and before any such statement is allowed to be published in our advertisements, I have to be satisfied personally that it has been verified on the lines I have indicated.

ELECTRICAL COMPETITION.

Public attention has been called recently to the new schemes that are at present before the Government, with regard to the development of electricity. This is a matter which causes me no anxiety whatever, so far as the prospects of gas are concerned. Electricity and gas have each their uses, and, in my opinion, no home in the future will be complete without both. But, so far as competition with our industry is concerned, electric cookers and heaters are wholly unable to make a stand, in view of the greatly increased efficiency of gas as a cooking and heating agent, due to the Radiation developments and inventions. To fight electricity, you must have apparatus of the highest efficiency. It is no use going into a fight with one hand tied behind one's back. Gas apparatus giving 30 to 40 p.ct. efficiency is useless in the circumstances; and it is here that Radiation comes in—with its apparatus giving the highest efficiencies yet attained. It has all along been our aim and practice to supply only apparatus giving the highest possible efficiency, and giving perfect combustion. This is why we have spent, and continue to spend, such a huge sum of money upon the perfecting of our apparatus. With our continuous research work, we naturally look forward to important new discoveries from time to time, and that would be reflected in further developments of our apparatus; but on the best knowledge up till now available to us, the efficiency of our apparatus is the highest attainable. To produce the best and the most efficient apparatus will always entail very considerable expenditure in research and experimental work, and the embodying of the results of such work in apparatus necessarily means that such apparatus costs more than apparatus that has not behind it this history of research work and this consequent high efficiency. In comparing two gas fires or two gas cookers similar in appearance, but one cheaper than the other, it would only be delusion to suppose that the one would give as good results as the other—the deciding factor of a wise choice will invariably be, not the matter of price, but that of efficiency—and our Radiation apparatus exemplify the truth of the adage that the best is always the cheapest. I cannot too strongly emphasize the importance of gas undertakings and the public insisting upon having only apparatus of the highest efficiency, the most economical, and the most helpful to the consumer in all that wide variety of uses for which gas is the cheapest and the most convenient medium. On that condition, I am satisfied that the prospects of gas never stood higher than they do to-day, and that there never was better warrant for all those connected with the gas industry going forward with strenuous endeavour joined with perfect confidence in the future.

FORESIGHT AND ENERGY OF THE GAS INDUSTRY.

In speaking of this confidence, I should like to express sincere appreciation of the extent to which this fortunate condition of the industry is due to the foresight and the energy which are devoted by the gas undertakings to the furthering of this end. A great variety of activities are carried on by the gas undertakings for the promotion of the sale of gas and gas apparatus. Many industries—perhaps most—are content to sell their product and receive their price, but, in the case of the gas undertakings, the selling of the product is only the beginning, which is followed by attention and help suited to the consumer's requirements, so as to ensure that he shall continue using gas under conditions of the greatest possible comfort, utility, and economy.

While the gas apparatus section bulks so largely in our business, I need not remind you that we have other and important branches of work, and these also, I am glad to tell you, are in a prosperous and promising condition. Notwithstanding the enormous development in the heating of houses by gas, and the widespread use of gas cookers, yet under the new building schemes what are called "Combination" coal-grates are used in very great numbers, and I am pleased to be able to tell you that the foundry departments of our various works are selling large quantities of apparatus of this kind, such as the "Yorkist" combination grate made by Wilsons & Mathiesons, and the "Eagle" combination grate made by the Eagle Range and Grate Company. A number of these are specially designed by us to burn gas coke, and also these have provision for heating the oven with gas in the summer time, when the grate is not required for warming. There is also a gas hotplate with gas boiling burners and grilling burner.

Before coming to the part of my address which perhaps may be of more direct personal interest to you than anything I have said—namely, the question of dividend—I should like to take this opportunity of drawing attention to the very unfair position existing to-day regarding the municipal franchise of limited liability companies. A very large amount of local revenue is frequently contributed by limited companies, and yet their directors have no opportunity whatever of exercising any control over this expenditure, though such concerns may have large works in that particular district, and be contributing substantially to the local revenue. I understand a Bill has been drafted by the London Municipal Society to deal with this matter, and I do hope the state of the Law may be altered so that directors of a limited company will be placed in a position to qualify for membership, and be elected members, of local authorities.

DIVIDEND.

I now come to the question of dividend. Our sales last year were our highest on record. They run into millions per annum, and, in consequence, our profits have shown a satisfactory increase, as, though the actual percentage of profit is less, this has been more than counterbalanced by the increase of turnover. Our considerably increased turnover last year has led to an increase in our profits, and, in view of the increase in our profits, due to the reason given and to the fact that the income-tax is now 4s. instead of 6s., we are proposing to pay this year a bonus, which you will have seen in our report, and, I hope, welcomed. It is important that this matter of bonus should not be misunderstood in any quarter. We are not robbing our customers to pay this increase; in point of fact, we are increasing our discounts to them, of which I know

the gas undertakings will be only too pleased to give the benefit to their gas consumers by reducing to them the prices of our goods. This is in addition to the rebates that are given by us to gas undertakings, varying according to the amounts they purchase from us, which means a very substantial total percentage off our present list prices. It is equally important to remember that we are not underpaying our workpeople nor reducing their numbers or their rates to enable us to pay this increased dividend.

One has also to remember that during this present year we shall have to bear a very considerably increased burden under the Act which has recently been passed regarding contributory pensions. What that amount will be I am not proposing to trouble you with, but it is a very substantial five figures a year. This means that we shall have very considerably to increase our turnover this year to meet the extra burdens this will place on our shoulders. Indeed, even now our dividend for an industrial concern liable to fluctuations is still a moderate one in comparison with that of many other industrial concerns. I have told you in previous years that we want the Radiation shares to be recognized as an investor's security, and not as a speculator's, and it is the continued hope and aim of the Directors that Radiation Limited should become known—by the steadiness of the Company's policy and the absence of sensational occurrences in connection with the shares—as a "gilt-edged" industrial investment. We see some concerns in the happy position of having reserves equal to their paid-up capital; and if I followed my own inclination I would not pay any increased dividend until we had been able to build up our reserves to this extent, were it not for the special circumstances to which I have referred. As things are, and in view of the still great uncertainties ahead of us, I am of the opinion that the course we have adopted by making our small increase by way of a bonus, and not increasing the dividend, is a wise one. I am not suggesting that we cannot continue to pay this increase in future, but those of you whom I have addressed on a number of similar occasions will, I think, agree that our policy has always been in the best interests of the shareholders.

We have acquired considerably more land and are still extending some of our works; and I hope and believe in the future that as we keep adding to our turnover we shall be able to give to our customers in the prices of our goods a full measure of the advantage of the savings we make, improve matters for our workpeople wherever possible, and ensure their continuous employment.

It has been our custom to post to our shareholders at the close of the annual meeting the warrants for the final dividend. This year, however, as we were hoping to be able to make an increase on the amounts of the warrants, but had decided not to do this unless, at the same time, we could find it possible to make a reduction of prices to our customers, we could not take the risk of having our dividend warrants printed as early as formerly. As we have a number of thousands of shareholders, it takes a considerable time to have these printed, filled up, signed, and despatched; and you will therefore realize that we are not able to get this work done in time to send out the warrants on the day of the meeting. These will be posted to you on April 10, and, in future years, the warrants will be posted at a similar interval after each annual meeting, in accordance with what is the practice in a great many large companies.

I will conclude, gentlemen, by moving: "That the report and balance-sheet for the year ended Dec. 31, 1925, as presented by the Directors, be approved and adopted."

DEVONPORT GAS AFFAIR.

Writs for Libel.

Our Plymouth correspondent writes that the Devonport gas affair took a new turn on Saturday, when it was announced that Mr. W. M. Carr, the son of the late Mr. Isaac Carr, had issued writs for alleged libel against the Chairman of the Plymouth Corporation Gas Committee (Mr. J. C. Tozer) and another member of the Council (Mr. Lovell R. Dunstan). The grounds of the action are statements alleged to have been made in the Council Chamber during a debate on the irregularities in the conduct of the gas undertaking at Devonport. A public fund is proposed to indemnify Messrs. Tozer and Dunstan against the considerable costs which the defence will involve.

GAS REGULATION ACT APPLICATIONS.

There have appeared in the "London Gazette" the following notices regarding applications to the Board of Trade under the Act.

SPECIAL ORDERS.

Farnham Gas and Electricity Company.

To extend the limits of supply, to enable the Company to raise additional capital, and for other purposes.

Herne Bay Gas Company, Ltd.

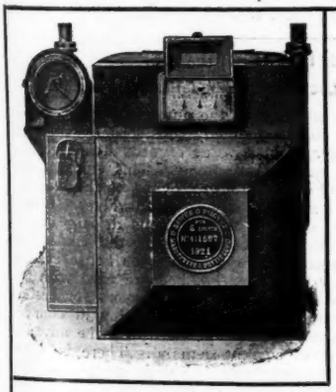
To confer upon the Company further borrowing powers, to enable them to purchase and work-up residual products, and for other purposes.

Norwich Station (British Gas Light Company, Ltd.).

To extend the limits within which the Company may supply gas, to provide for charging to the undertaking money expended upon the acquisition and development of the business of the Wymondham Gas Light and Coke Company, Ltd., or any other gas undertaking in the proposed extended limits, to use scheduled lands, &c.

DECLARATIONS OF CALORIFIC POWER.

Audley Urban District Council.—450 B.Th.U. (June 1.)
Prescot Gas Company.—450 B.Th.U. (July 1.)



The "Victory"

Nelson Meter Works,
MANCHESTER.

Radford Meter Works,
NOTTINGHAM.

45/47, Westminster Bridge Rd.,
LONDON, S.E. 1.

SAWER & PURVES
BRANCH OF METERS LTD.

TELEPHONE NOS.:
3289 (City) Manchester.
2025 Nottingham.
2412 (Hop) London.

TELEGRAMS
"Sawer Manchester."
"Sawer Nottingham."
"Metrique Lamb, London."

GLASGOW GAS DEPARTMENT STRIKE.

On Saturday, March 20, 600 employees of the Glasgow Corporation Gas Department went on strike. The strike, an unofficial one, with which the men's four trade unions, including the National Union of General and Municipal Workers, disclaim connection, has arisen as the result of certain disciplinary measures taken by the Department management. The men involved are employed in the distributing section of the Department, and include plumbers, brass finishers, tinsmiths, and general workers. Their work is the installation, repair, and renewal of gas appliances such as fires, cookers, meters, and the urgent work of repairing escapes. While the general work of the distribution section cannot be carried on, arrangements have been made to cope with any emergency repairs that may arise. The events which gave rise to the strike are as follows.

For a considerable period it has been known to the management that the shops belonging to private plumbers in all parts of the district were being made use of by the Gas Department's workmen, for purposes other than legitimate. Information was received that property of the Gas Department was being dumped at these places, and much working time wasted there. The management endeavoured, through the usual channel of the inspectors, to put a stop to the practice; but this warning had no effect. Later, on Nov. 10, 1925, the notice was posted on the board at the Walls Street Fitting Depôt, to the effect that various complaints had been made that the workmen employed in the Department were spending a great deal of their time in plumbers' shops, and certain cases had been suggested where surplus materials which should have been returned to stores had been dumped in these places. The workmen in the Department were strictly forbidden to use plumbers' shops for any reason whatever; the notice informing them that any men disregarding this instruction would be liable to instant dismissal.

This notice, however, was entirely disregarded; and consequently steps were taken to detect the offenders. Several of the first cases were given a warning, in the hope that this would prove to be sufficient. It was soon apparent that these warnings were being ignored, while complaints and information were still being received by the Department from various sources. The management therefore considered that a fair warning had been given; and the next cases discovered (in February) were dealt with as notified in the instruction of Nov. 10, 1925. Other cases were detected in March, and the men involved were dismissed the Department's service.

On March 17, a deputation of two fitters from Walls Street admitted that the practice complained of was being continued, and suggested that some misunderstanding had arisen. The deputation suggested that, as the employees were now agreeable to comply with the instruction posted, and admitted that illicit use had been made of the forbidden premises, the Department should reinstate the dismissed men. It was thereupon suggested that the deputation should return in one month. If they could then say that the instruction had been respected, consideration would be given to the question of the men being reinstated. First, however, the instruction must be complied with unconditionally. The men went on strike three days later.

The question was discussed by a Sub-Committee on Gas Supply at a special meeting on March 23, when it was decided that the men on strike be asked to resume work, and be informed that, on their so doing, a Sub-Committee would be appointed to consider the case of the men referred to by the deputation as having been dismissed. This minute came before the full Committee of Gas Supply on March 24, when it was decided that the terms of the motion be adhered to.

TRADE NOTES.

New Holder for Seaham.

Messrs. Ashmore, Benson, Pease, & Co., Ltd., of Stockton-on-Tees, have been entrusted with an order for a steel tank and a two-lift spiral-guided gasholder of 250,000 c.ft. capacity for the Seaham Gas and Lighting Company. This is the fourth holder these contractors have supplied for the same works.

Hydrogen and Oxygen Production.

Substantial orders for plant for the production of hydrogen and oxygen have been received from France and America by the International Electrolytic Plant Company, Ltd., of Chester. This Company were successful recently in obtaining an important contract in France against severe Swiss and German competition.

Acetylene Plant.

The Finnieston Engineering Company, Ltd., of Scotstoun, are supplying one of the largest acetylene gas generating plants in the country for a West of Scotland industrial company. The plant will be automatic and self-cleaning, and will have a gas output of 3000 c.ft. an hour.

Photometers by Messrs. Alexander Wright & Co.

The National Physical Laboratory, at Teddington, have now added to their considerable equipment for the standardization of electric lamps and the investigation of characteristics of the sources of light a complete photometer bench by Messrs. Alexander Wright & Co., Ltd., of Westminster, the suppliers of the original equipment. Duplicates of this outfit have also been furnished to Colonial and Foreign Governments and educational institutions. Sheffield University and Huddersfield Technical College are being equipped with similar photometrical apparatus: and the Woolwich Polytechnic are installing a complete equipment for testing the calorific value of gas.

Accident to Gasholder at Hyde.—According to a newspaper report, an accident which gave rise to considerable alarm in the neighbourhood occurred recently at the Hyde Gas Company's works, when the entire contents of a 700,000 c.ft. gasholder, which was full at the time, escaped through a hole in the crown.

NORTH-EAST COAST COAL TRADE.

From our Own Correspondent.

The week has again passed in quiet fashion, and the market continues dull and inactive. Both buyers and sellers adopt a waiting attitude, and the meetings of the owners and men with one another and with the Prime Minister gave little indication of possible developments.

Inquiry for periods beyond April is scarce, and prompt business is slow. Better class coals are well sold, but others are mostly weak. Wear Special gas makes hold firmly for 19s. to 19s. 6d. f.o.b., and best qualities are 18s. Seconds are about 14s. 6d. to 14s. 9d., and coking makers ask the same.

With the approach of Easter little is likely to be done, but, in the absence of any early signs of a settlement, stronger markets may be anticipated for April.

YORKSHIRE AND LANCASHIRE COAL TRADE.

From our Local Correspondent.

There is a feeling of uncertainty in Yorkshire and Lancashire this week about the near future of the coal trade in view of the Government declaration regarding the report of the Coal Commission. The larger consumers of fuel are awaiting with interest the outcome of the negotiations now proceeding. It is generally felt that unless some form of assistance is given to the thinner seam pits a considerable number of them will close on April 30.

The milder weather has affected the demand for house coal, which is moving but slowly.

The key industries are apparently not working any better, and fuels are, as a result, not firm.

There is an indication that gas coals may be slightly cheaper as compared with last year, and whether forward buying is policy remains problematical.

The shipping outlook seems to go from bad to worse, and with the severe competition from the nearer Continental countries it looks as though the cost of production in this country will have to be materially reduced if we are to make a serious bid for our previous trade.

The following are the Humber bunker and export prices, f.o.b. usual shipping ports: South Yorkshire—Hards, 20s. 6d. to 20s. 9d.; screened gas, 19s. 6d.; washed trebles, 20s.; washed doubles, 19s. 3d.; washed singles, 17s. to 17s. 3d.; washed smalls, 12s. 3d.; unwashed doubles, 17s.; rough slack, 8s. 9d.; smithy peas, 19s. to 21s. 7d. West Yorkshire—Hartley's (f.o.b. Goole), 17s. 6d. to 18s. 6d.; washed trebles, 18s. 6d.; washed doubles, 17s. 6d. to 18s.; washed singles, 16s. 3d. to 16s. 9d.; washed smalls, 12s. 3d. to 12s. 6d.; unwashed trebles, 16s. 6d. to 17s.; unwashed doubles, 14s. to 14s. 6d.; coking smalls, 9s. 6d. to 10s. Derbyshire and Nottinghamshire—Top hards, 19s. 6d. to 22s. 6d.; washed trebles, 19s. to 19s. 6d.; washed singles, 17s. to 17s. 3d.; washed smalls, 11s. 3d. to 11s. 6d.; unwashed doubles, 17s.; rough slack, 9s. to 9s. 6d. Yorkshire, Derbyshire, and Nottinghamshire—Screened steam coal, 17s. 6d. to 18s. 6d.; gas coke, 20s. to 21s.; furnace coke, 16s. 6d. to 17s.

COAL TRADE IN THE MIDLANDS.

From Our Local Correspondent.

Industrialists are less apathetic as to the future of supplies. It cannot be said that they are stocking on any considerable scale, but market conditions are no longer so inactive as regards steam grades. Slacks have been moving off much more freely. This efflux, taken in conjunction with the slowing down of output owing to the seasonal diminution in the household trade, has strengthened values. Otherwise price changes have been confined to variations arising out of local conditions. The colder weather has rewarded the caution of those collieries that did not lower their quotations for house coal at the beginning of March. Now that April has been reached with the issue in the mining industry still in suspense, the reasons for hesitation are reinforced from another point of view. Policy in connection with price adjustments is not dictated primarily by the advance of the season and the volume of current demand. There is some misgiving lest the temptation to procrastinate should postpone a decision in regard to the momentous questions which confront the industry to a season when an impartial judgment on the merits of the problem would be more difficult to obtain.

Corbridge Gas Company.—At the annual meeting of the Company, Mr. George Renwick, who presided, said that a dividend of 6 p.ct. (less income-tax) was recommended, and that £165 would be added to the reserve fund. The report was an excellent one, and gas sales had increased by 7 p.ct.

Lewes Gas Company.—Presiding at the half-yearly meeting of the Company, Mr. W. E. Nicholson (Chairman) said that after providing for income-tax, interest on mortgages, &c., the balance of net revenue was £2121. Dividends for the half-year ended Dec. 31 last were recommended at the rate of 5 p.ct. on the original stock, and 3½ p.ct. on the additional stock. Following this meeting an extraordinary meeting was held, at which Mr. C. F. Botley (the Company's Consulting Engineer) gave details of a proposed scheme for improving the works. He had pressed upon the Directors, he said, the desirability of getting a new showroom as soon as possible. At present it was essential that they should have a new gasholder. A thorough reconstruction of the old plant was also necessary, and soon they might have to seek further statutory powers. Mr. H. J. Hillman (the Secretary) moved "That in order to meet the requirements of the Company, the Directors be authorized to raise the remainder of their additional capital as additional capital stock . . . also to borrow on mortgage, in respect of such issue, up to an amount authorized by the Lewes Gas Act, 1878."

CURRENT SALES OF GAS PRODUCTS.

The London Market for Tar, Tar Products, and Sulphate.

LONDON, *March* 29.

The market for pitch is a little quieter; but the price is firm at about 87s. 6d. per ton for prompt shipment, and 80s. per ton for the last three months of the year.

Creosote is steady and unchanged at about 7⅛d. to 7¼d. per gallon net and naked at makers' works.

Tar spirits are in demand; pure benzole and pure toluole being firm at about 2s. per gallon, and 95/160 solvent naphtha at 1s. 10¼d. to 1s. 11d. per gallon.

Other products are without change.

Tar Products in the Provinces.

March 29.

There is little to report in the markets for tar products.

Pitch is still steady, and the prices remain the same. There is still some inquiry for this season's delivery, but the position is quieter for next season.

The average values for gas-works products during the week were: Gas-works tar, 57s. to 62s.. Pitch, East Coast, 85s. to 87s. 6d. f.o.b. West Coast—Manchester, 77s. to 78s.; Liverpool, 78s. to 79s.; Clyde, 81s. to 82s. Benzole, 90 p.ct. North, 1s. 8½d. to 1s. 9½d.; crude, 65 p.ct., at 120° C., 1s. 1d. to 1s. 2d., naked at makers' works; 50-90 p.ct., naked, North, 1s. 8½d. to 1s. 9½d. Toluole, naked, North, 1s. 8d. to 1s. 9d., nominal. Coal-tar crude naphtha, in bulk, North, 8d. to 8½d. Solvent naphtha, naked, North, 1s. 5d. to 1s. 6d. Heavy naphtha, North, 11½d. to 1s. 0½d. Creosote, in bulk, North, liquid, 6½d. to 6¾d.; salty, 6d. to 6⅛d.; Scotland, 5¾d. to 6d. Heavy oils, in bulk, North, 6¾d. to 7d. Carbolic acid, 1s. 4d. to 1s. 5d. prompt. Naphthalene, £11 to £14; salts, £4 to £5, bags included. Anthracene, "A" quality, 2½d. per minimum 40 p.ct., purely nominal; "B" quality, unsaleable.

Manchester District Tar Prices.

The average prices realized for the sale of tar in the Manchester district, according to the sliding-scale, for the months of January and February were £2 17s. 0·19d. and £3 3s. 9·80d. respectively. The figure for December is not yet to hand.

CONTRACTS OPEN.

Purifiers and Superstructure.

The Newbury Corporation are inviting tenders for the supply and erection of two purifiers with superstructure. [See advert. on p. 831.]

Coal.

The Gas Department of the County Borough of Dewsbury are inviting tenders for the supply of 17,000 tons of gas coal. [See advert. on p. 831.]

Pipes, Oils, Meters, Cookers, Paint, Oxide, &c.

The Tipton Urban District Council are inviting tenders for the supply of sulphuric acid, lime, creosote, naphtha, oils, pipes, iron and steel, lamp columns, glass, &c. [See advert. on p. 831.]

Tenders are invited by the Gas Department of the Edinburgh Corporation for the supply of cast and wrought iron pipes, castings, tools and implements, brass goods, meters, cookers, oxide of iron, gas and other oils, paints, &c. [See advert. on p. 831.]

EXTENSIONS.

New Plant for Droitwich.

The Droitwich Gas Committee have approved a report of the Manager suggesting the provision of new plant and the making of alterations at a cost of £6200.

Extensions at Accrington.

The Accrington District Gas Board have approved an important scheme of extension to gas plant and distributing mains, submitted by Mr. A. J. Harrison (the General Manager); the estimated cost being £29,600. Mr. Harrison stated that the increasing demand for gas required additional producing plant. Part of the trunk main system also needed to be relaid and enlarged.

Brentwood and Dover Stock Issues.—We learn from Messrs. A. & W. Richards that the tenders sent in for the £25,000 of 5½ p.ct. perpetual debenture stock in the Brentwood Gas Company ranged from £105 down to the minimum of par. The tenders for the Dover Gas Company's issue of £5000 of new 7½ p.ct. maximum stock ranged from £110 down to the minimum of £105 p.ct.

Bath Gas Company's Debenture Stock Issue.—The Bath Gas Light and Coke Company have just carried through a successful issue of £46,666 of 5 p.ct. perpetual debenture stock, at £95 p.ct. The issue was undertaken by the Company themselves, and the stock was heavily over-subscribed in the first three days. A satisfactory feature of the issue is that over 90 p.ct. of the stock has been taken up by local people.

Gas-Works Extensions at Droitwich.—At a recent meeting of the Droitwich Town Council it was decided to adopt a report of the Gas Manager (Mr. Howard Wise) recommending alterations and extensions at the gas-works, and the laying of new mains in the Witton and other areas at an estimated outlay of £6200. The Chairman of the Lighting Committee (Councillor Evans) explained that the changes had been rendered necessary by the increased consumption of gas. In 1914 the make of gas was 100,000 c.ft. per day; now it was 177,000 c.ft. Seventy-five p.ct. of the consumption was for heating and cooking purposes, so that the competition of electric light was not to be feared.

Reduced Price at Bawtry.—The Bawtry Gas Company have reduced the price of gas all-round by 3d. per 1000 c.ft., to date from March 31.

Gas Exhibition at Todmorden.—The Todmorden Corporation Gas Department have held, in the Town Hall, an interesting exhibition of domestic and other gas appliances. The Mayor (Ald. W. Greenwood), in opening the exhibition, remarked on the wastefulness and injurious effects of smoke from coal fires. Cookery demonstrations were given.

Heavy Demands for Gas at Grangemouth.—At a recent meeting of the Grangemouth Town Council, the insufficient supply of gas prevailing in the town was attributed to the increase of houses, and to the fact that Scottish Dyes made large demands. It was stated that the Tully plant had been a useful adjunct to the gasmaking plant; but a letter was read from a steam laundry in the neighbourhood of the gas-works, complaining that, in consequence of the smoke from the Tully plant, they suffered heavy financial loss. It was decided that additional retorts be installed.

Further Reduction in Price at Cleethorpes.—Following on the introduction of a scale of discounts for gas used for trade purposes, the Cleethorpes Gas Company have decided to make an all-round reduction of 0·2d. per therm. The reduction is equivalent to approximately 1d. per 1000 c.ft. A local paper remarks that, coming at a time when other concerns are finding it necessary to increase the price of gas, it reflects credit on the efficiency of a concern which is recognized as being one of the most progressive in the industry. It may be pointed out, too, that Cleethorpes is situated at a distance from the coalfields.

Co-Partnership at Weston-super-Mare.—The co-partners of the Weston-super-Mare Gas Light Company held their first annual dinner on Friday, March 19. To this the Chairman and Directors, together with the Engineer and Secretary, were invited as the guests of the evening. The Chairman of the Company expressed the gratification of the Directors at the excellent spirit of comradeship which had developed under their co-partnership scheme, and the pleasure it gave the Directors and chief officials to attend the function at the invitation of their employees. After dinner, a most enjoyable vocal and instrumental concert was given by members.

Sheffield Gas Company Anglers.—On Friday evening, March 19, at the Exchange Restaurant, the fourth annual dinner of the Angling Section of the Sheffield Gas Company's Sports Club was held. Mr. R. Halkett (General Manager and Secretary) presided, and was supported by Messrs. Chamberlain, Watson, Collett, W. Ward, Bates, Musgrove, Meakin, and McCulloch. The visitors were toasted at the call of Mr. Chamberlain, Mr. Barlow replying. "The Gas Company" was proposed by Mr. W. Ward. Mr. R. Halkett, in reply, said that the year had been successful, although there had been many difficulties to contend with. The Company continued to supply the cheapest gas to industrial consumers; and they were all convinced of the necessity of this. Much of their success was due to the good feeling between the employers and the employees. "The Angling Section" was proposed by Mr. L. Watson, and responded to by Mr. T. L. Bottomley (Chairman of the Section).

Australian Gas Light Company.—The half-yearly meeting of the Company was held in Sydney on Feb. 4—Mr. George J. Cohen (Chairman) presiding. The General Manager and Secretary (Mr. Andrew Wilson, M.I.E. Aust.) submitted the Auditors' certificate of profits, and the Directors' statement recommending the payment of a dividend for the half-year of 4 p.ct. on the old "A" and "B" shares, and in proportion on the new "A" shares. The Chairman, before moving the adoption of the statement, announced the resignation of the Secretary, Mr. C. U. B. Gurnett, which took effect on Jan. 31. Mr. Gurnett had secured the appointment of Director and General Manager of Messrs. Stott & Underwood, Sydney. He entered the service of the Company as Assistant Secretary in 1916, and upon the retirement of Mr. R. J. Lukey was appointed Acting Secretary, his appointment as Secretary following on June 1, 1919. The Chairman expressed, on behalf of the Board and shareholders, hearty appreciation of the splendid and devoted service rendered by Mr. Gurnett during the period he was connected with the Company as executive officer. Mr. Cohen went on to say that the Board, after mature consideration, had decided to appoint Mr. Andrew Wilson, the Company's Engineer, to the position of General Manager and Secretary, such appointment dating from Feb. 1, and to promote Mr. F. E. Williams, the Accountant, to the position of Assistant Secretary. On the motion of the Chairman, seconded by the Deputy-Chairman, the statement was unanimously adopted.

The Ministry of Health have ordered the Horncastle Urban Council to pay-off out of rates a deficiency of £2300 on the gas undertaking.

The Birmingham Corporation Gas Department have acquired 20 acres of land at Erdington at a cost of £4000, as a recreation ground for the employees.

At the last meeting of the Accrington District Gas Board, Mr. A. J. Harrison (the General Manager) said the Board had renewed 2380 service pipes in two years, and he estimated that some 300 still needed replacing.

At a recent meeting of the Middlesbrough Corporation, Mr. J. Wesley Brown (Chairman of the Finance Committee) stated that there had been a steady all-round development of the Gas Department. The number of consumers had advanced, and the consumption had risen from 850 million c.ft. to 890 millions. The present charge for gas was very little more than that charged in pre-war days. The average selling price in 1914 was 2s. 4·4d. per 1000 c.ft., and during the last financial year the average price was 2s. 6·91d. During the year the capital expenditure of the department was £42,804.

STOCK MARKET REPORT.

The three big new issues had a mixed reception last week. The underwriters were left with the larger part of their commitments, both in the case of the New South Wales 5 p.ct. stock issue and the Skoda 7½ p.ct. debenture issue. On the other hand, the new State of San Paulo 7 p.ct. Waterworks Loan was a complete success, and is quoted at ⅝ premium.

Business continued on the quiet side during the whole of the week. There was very little speculation, most of the dealings being confined to Government stocks. The 5 p.ct. War Loan hardened to 101⅝; but the 3½ p.ct. Conversion Loan was slightly easier at 74⅞. It is not generally realized that for temporary investment it is more profitable to select these short-term loans than to invest in industrial shares carrying higher interest, by reason of the saving on commission, stamp duty, &c.

Industrials were colourless. With few buyers, prices of Textile, Tobacco, and other shares gradually eased off on a dribble of realizations. With no reassuring statement from Lever Bros., sales of the preference shares continued, and there has been a drop of from 2s. to 2s. 6d. on both the 7 p.ct. and the 8 p.ct. shares during the week.

Gas Stocks are reported firm. Prices, however, are still very low, and intending investors should not lose the opportunity of completing their investments. Leaving out of account the shares of companies operating abroad—most of which realize on present prices between £8 and £9 p.ct.—there are at least a dozen stocks in the list that show a return of from £7 to £8 p.ct. per annum. Among these may be mentioned Hornsey, Portsea Island, Hastings, Tynemouth, North Middlesex, and Maidstone stocks. There are many more stocks which show a yield of between £6 and £7 p.ct. per annum. It is a curious fact that the lowest yield is that of the Hong Kong Company, which shows only £4 18s. 8d. p.ct. per annum, and would appear therefore to be over-valued.

The following transactions were recorded during the week:

On Monday, Aldershot 4 p.ct. preference 70, Alliance and Dublin 72, 72½, British 101½ *ex* div., Commercial 4 p.ct. 76, Croydon sliding-scale 95¼, 96, Gas Light and Coke 81⅛, 81⅜, 81¾, 82, 82¼, 82½, 82⅜, 4 p.ct. preference 74⅞, 3 p.ct. debenture 58½, Imperial Continental 139, Primitiva 10s. 6d., South Metropolitan 91⅛, 91¼, 91½, 91⅜, 92, 92¼, South Suburban 5 p.ct. 95⅛, 96¼, Tottenham "B" 86½, 87.

On Tuesday, Bombay 19s., 19s. 6d., Bournemouth "B" 12⅛, British 102 *ex* div., Croydon maximum dividend 80⅛, Gas Light and Coke 81½, 81⅜, 82, 82¼, 82⅜, 82½, 4 p.ct. preference 74¼, Primitiva 10s., 10s. 3d., South Metropolitan 91½, 92¼. Supplementary prices, Watford "B" 86.

On Wednesday, Bombay 19s., 20s., Bournemouth "B" 12⅜, British 103½ *ex* div., Croydon sliding-scale 95⅛, European 5¾, Gas Light and Coke 81½, 81¾, 82¼, 82⅜, 82½, 4 p.ct. preference 74½, 3 p.ct. debenture 57⅜, 58½, 58⅜, 59¾, Montevideo 73, Primitiva 10s., 10s. 1½d., 10s. 3d., 10s. 6d., South Metropolitan 91¾, 92¼, South Suburban 96½, Wandsworth (Wimbledon stock) 97, 97½. Supplementary prices, Barnet "A" 149¼, 149½.

On Thursday, Aldershot 4 p.ct. preference 70, Alliance and Dublin 72, 72½, Bombay 19s. 3d., Brighton and Hove consolidated 168 *ex* div., British 104½ *ex* div., Croydon 97, maximum dividend 81, European 5⅞, Gas Light and Coke 81½, 81¾, 81⅞, 82, 82¼, 82⅜, 82½, 3½ p.ct. maximum 58, 4 p.ct. preference 74, Primitiva 10s., 10s. 1½d., 10s. 3d., 10s. 4½d., South Metropolitan 91¾, 92½, 92¾, South Suburban 97½, Tottenham "B" 88, 4 p.ct. debenture 74½, Wandsworth "A" 123½, "B" 104. Supplementary prices, Reading 5 p.ct. maximum 91, 91½, Tottenham 5 p.ct. preference 82, Wandsworth new 88.

On Friday, British 103½, 104 *ex* div., Commercial 4 p.ct. 80, Continental Union 33, 33½, European 5¾, Gas Light and Coke 81⅜, 81½, 81¾, 81⅞, 82, 82⅜, 82½, 3½ p.ct. maximum 58, 4 p.ct. preference 75½, 3 p.ct. debenture 58, Imperial Continental 140½, 141, Montevideo 73, 73½, Newcastle 73, Primitiva 10s. 1½d., 10s. 4½d., 10s. 6d., South Metropolitan 92, 92½, 92¾, 3 p.ct. debenture 57½, 58½, Southampton 79⅜ *ex* div., Swansea 7 p.ct. preference 100½, 6½ p.ct. debenture 101. Supplementary prices, Danish 5 p.ct. preference 87, Hastings and St. Leonards 3½ p.ct. debenture 63, 63½.

The Government secured its monetary requirements last week at a cheaper rate than was expected; £43,500,000 were allotted in Treasury Bills at an average of £4 5s. 1·01d. p.ct. There was rather more demand than usual at the end of the week for short loans, and the rate was mostly from 4¼ to 4½ p.ct., falling slightly as the day progressed.

The French franc again dominated the situation on the Foreign Exchange Market. On Friday a new record of 142 was touched, but at the time of writing the latest quotation is 141⅜. Otherwise there was little movement of consequence in any other exchange. Belgian francs in sympathy touched the highest point 122⅜. Italian lire were quoted at 120.90; and Sterling on New York again closed at 4.86 7/32.

Silver was a quiet market, the spot price remaining at 30 3/16d. per oz. The price of Gold dropped slightly to 84s. 10½d. per oz.

The Bank Rate is 5 p.ct., to which it was raised from 4 p.ct. on Dec. 3. Bankers' deposit rates are 3 p.ct. The deposit rates of the discount houses are 3 p.ct. at call and 3½ p.ct. at notice.

Issue.	Share.	When ex-Dividend.	Dividends. Prev. Hf.Yr	Dividends. Last Hf. Yr.	NAME.	Quotations. Mar. 26.	Rise or Fall.	Transactions Lowest and Highest Prices.
£			%p.a.	% p.a.				
171,978	Stk.	Feb. 4	5	5	Aldershot 5 p.c. max. *c*	74—77	..	..
322,992	,,	,,	4	4	Do. 4 p.c. Pref.	69—74	..	70
1,551,868	,,	Oct. 8	6¼	6¼	Alliance & Dublin Ord.	69—73	..	72—72½
374,000	,,	Jan. 7	4	4	Do. 4 p.c. Deb.	58—63	..	..
300.000	1	Oct. 22	1/7½	1/7½	Bombay, Ltd.	¾—1	..	19/0—20/0
170 000	10	Mar. 4	8½	8½	Bournemouth 5 p.c.	12—13	..	..
425,050	10	,,	7	7	Do. B 7 p.c.	12—12½	..	12⅛—12⅜
275,000	10	,,	6	6	Do. Pref. 6 p.c.	11—12	..	..
50 000	Stk.	Jan. 7	3	3	Do. 3 p.c. Deb.	55 - 58	..	..
162.025	,,	,,	4	4	Do. 4 p.c. Deb.	75—78	..	..
214,740	,,	Mar. 18	12	12	Brighton & Hove Orig.	167—172*	..	168
244,200	,,	,,	9	9	Do. A Ord.	130—135*	..	..
1,287,500	,,	July 23	5	5	Bristol 5 p.c. max.	89—91*a*	..	..
855,000	,,	Mar. 18	8	7	British Ord.	100—105*	+2	101½—104½
100,000	,,	Jan. 7	7	7	Do. 7 p.c. Pref.	117—122	..	..
120.000	,,	,,	4	4	Do. 4 p.c. Red. Deb.	69—74	..	..
100.000	10	Dec. 17	8	6	Cape Town, Ltd.	6½—7½	..	..
100,000	10	Nov. 5	4½	4½	Do. 4½ p.c. Pref.	6—7	..	..
150,030	Stk.	Jan. 7	4½	4½	Do. 4½ p.c. Deb.	68—73	..	..
626,860	,,	Feb. 18	6	6	Cardiff Con. Ord.	96—99	..	..
237,860	,,	Jan. 7	7½	7½	Do. 7½ p.c. Red. Deb.	98—101	..	..
157,150	,,	Mar. 4	5	6½	Chester 5 p.c. Ord.	87½—92½*b*	..	..
79.185	1	Oct. 8	—	2/-	Colombo Ltd. Ord.	25/—27/-	..	..
24,500	1	,,	—	1/4½	Do. 7 p.c. Pref.	21/—23/-	..	..
1,513,280	Stk.	Mar. 4	5½	5½	Commercial 4 p.c. Cap.	77—82	+1	76 - 80
560,000	,,	,,	5/3/4	5/3/4	Do. 3½ p.c. Cap.	76—81	..	..
475,000	,,	Dec. 17	3	3	Do. 3 p.c. Deb.	55—58	..	..
800.000	,,	Oct. 8	—	4	Continental Union, Ltd.	33—38	..	33—33½
200.000	,,	Mar. 4	7	7	Do. 7 p.c. Pref.	85—88	..	..
737.150	,,	Mar. 4	6½	6½	Croydon sliding scale	95—98	..	95½—97
403,100	,,	,,	5	5	Do. max. div.	79—82	..	80⅝—81
491,270	,,	Mar. 4	6	9	Derby Con.	107—109*c*	..	..
55,000	,,	Dec. 17	4	4	Do. Deb.	74—76*c*	..	..
209,000	,,	Mar. 4	5	5	East Hull Ord. 5 p.c.	86—89	..	..
50,000	,,	Dec. 17	—	5	Eastbourne 5 p.c. Deb.	93 - 98	..	..
1,002,180	10	July 23	4	6	European, Ltd.	5½—6½	−¼	5⅞—5⅞
16,413 285	Stk.	Feb. 18	5½	4/17/4	Gas Light & Coke 4 p.c. Ord.	81—83	..	81⅜—82½
2,600,000	,,	,,	3½	3½	Do. 3½ p.c. max.	58—61	..	58
4,062,235	,,	,,	4	4	Do. 4 p.c. Con. Pref.	74—77	..	74—75½
4,761,930	,,	Dec. 17	3	3	Do. 3 p.c. Con. Deb.	58 -61	..	57⅞—59¾
130,000	,,	—	10	10	Do. 10 p.c. Bonds	..	..	..
42.000	,,	—	7½	7½	Do. 7½ p.c. Ilford Deb	..	..	..
82,500	,,	Mar. 18	6½	6½	Hastings & St L. 5 p.c. Conv	88—93*	..	..
258,740	,,	,,	5½	5½	Do. 3½ p.c. Conv.	68—73*	..	..
70.000	10	Sept. 24	10	10	Hongkong & China, Ltd.	19⅜—20⅜	..	..
86,600	Stk.	Mar. 4	10	10	Hornsey 7 p.c.	128—133	..	..
1,976,000	,,	Nov. 19	59	10	Imperial Continental Cap.	136—141	..	139—141
226,170	,,	Feb. 4	3½	3½	Do. 3½ p.c. Red. Deb.	69—72	..	..
235,242	,,	Mar. 18	6½	6½	Lea Bridge 5 p.c. Ord.	95—100*	..	..
2,127,340	,,	Feb. 18	5½	5½	Liverpool 5 p.c. Ord.	79—79½*b*	−1	..
600.000	,,	Mar 18	7	7	Do. 7 p.c. Red. Pref.	101½—103½*b**	..	..
165,736	,,	Feb. 18	9	8	Maidstone 5 p.c. Cap.	115—120	..	..
63.480	,,	Dec. 17	3	3	Do. 3 p.c. Deb.	54—59	..	..
75,000	5	Dec. 3	7	6	Malta & Mediterranean	4½—5	..	..
541,920	Stk.	Nov. 19	4	4	Montevideo, Ltd.	70 - 74	..	73—73½
2,061,315	,,	Mar. 4	5	5	Newcastle & Gateshead Con.	73—74*d*	..	73
360.929	,,	,,	4	4	Do. 4 p.c. Pref.	75—76*d*	..	..
529,705	,,	Dec. 17	3½	3½	Do. 3½ p.c. Deb.	70—72*d*	..	..
15,000	,,	Mar. 4	11½	11½	North Middlesex 10 p.c.	155—160	..	..
91,530	,,	,,	8 2/5	8 2/5	Do. 7 p.c.	112—117	..	..
300,000	Stk.	Dec. 3	7	9	Oriental, Ltd.	98—103	..	..
188,120	,,	Jan. 7	7¼	7½	Plym'th & Ston'house 5 p.c.	110—115	..	..
60,000	50	Mar. 4	14	14	Portsea Island B	90—95	..	..
100,000	50	,,	13	13	Do. C	88—93	..	..
2,284,909	1	—	—	—	Primitiva Ord.	10/0—11/0	..	10/0—10/6
392,600	100	Dec. 1	4	4	Do. 4 p.c. Red. Deb.	82—84	..	..
600,000	Stk.	Jan. 21	4	4	Do. 4 p.c. Red. Deb. 1911	66—68	..	..
193,744	,,	Dec. 17	4	4	Do. B. Aires 4 p.c. Rd. Db.	66—68	..	..
264,496	,,	,,	4	4	Do. R'r P'te 4 p.c. Rd. Db	66—68	..	..
150,000	10	Mar. 18	6	6	San Paulo 6 p.c. Pref.	7⅛—8*	..	..
125,000	50	Jan. 4	5	5	Do. 5 p.c. Red. Deb.	43—46	..	..
270,000	Stk.	Aug. 27	5⅜	5⅜	Sheffield A	100—102*e*	..	..
419,968	,,	,,	5⅜	5⅜	Do. B	100—102*e*	..	..
1,047,000	,,	,,	5⅜	5⅜	Do. C	100—102*e*	..	..
90,000	10	June 11	6	4	South African	5—7	..	..
6,609,895	Stk.	Mar. 4	5	7	South Met. Ord.	91—93	+1	91½—92⅝
1,895,145	,,	Jan. 7	3	3	Do. 3 p.c. Deb.	56—59	..	57⅞—58½
734,000	,,	Mar. 4	6½	6½	Do. 6½ p.c. Red. Db.	102—104	..	..
91,500	,,	Mar. 4	8½	8½	South Shields Con.	121—123*d*	..	..
1,187,795	,,	Mar. 4	6½	6½	South Suburban rd. 5 p.c.	96—99	+1	95⅞—97½
368,817	,,	Dec. 17	5	5	Do. 5 p.c. Deb.	94 - 97	..	..
647,740	,,	Mar. 18	5	5	South'mpton Ord. 5 p.c. max	76—79*	..	79⅜
121,275	,,	Jan. 7	4	4	Do. 4 p.c. Deb.	69 - 74	..	..
250,000	,,	Mar. 4	7	7	Swansea 7 p.c. Red. Pref.	100—102	..	100½
200,000	,,	Dec. 17	6½	6½	Do. 6½ p.c. Red. Deb.	100—102	..	101
120,000	,,	Feb. 18	7⅛	7⅛	Tottenham District A 5 p.c.	107—112	..	..
882,275	,,	,,	5⅞	5⅞	Do. B 3½ p.c.	86—91	..	86½—88
150,000	,,	,,	29/4	5⅛	Do. 5½ p.c. Pref.	101—103	..	..
181,255	,,	Dec. 17	4	4	Do. 4 p.c. Deb.	74—77	..	74½
258,251	,,	Mar. 18	5	5	Tynemouth Con. and New Uxbridge, Maidenhead, & Wycombe 5 p.c.	67 - 68*d**	..	..
197,294	,,	Mar. 4	6⅜	6⅜	Do. 5 p.c. pref.	90—95	..	..
88.330	,,	,,	5	5	Do. 5 p.c. Maidenh'd	85—90	..	..
91,800	,,	,,	6⅜	6⅜	Wandsworth, Wimbledon, and Epsom—	87—92	..	..
30.000	,,	Mar. 4	8½	8½	Wandsworth A 5 p.c.	123—128	..	123½
255,636	,,	,,	7	7	Do. B 3½ p.c.	103—108	..	104
412,450	,,	,,	5/19/0	5/19/0	Do. C and New	88—93	..	..
352,000	,,	,,	6⅜	6⅜	Wimbledon 5 p.c.	97—102	+2	97—97½
98,000	,,	,,	7⅛	7⅛	Epsom 5 p.c.	105—110	..	..
88,416	,,	Jan. 7	3	3	3 p.c. Deb.	55—58	..	..

Quotations at:—*a.*—Bristol, *b.*—Liverpool. *c.*—Nottingham. *d.*—Newcastle. *e.*—Sheffield. *Ex. div.